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Video Conferencing and Multimodal Expression of Voice: Children's communication in a second language using Skype

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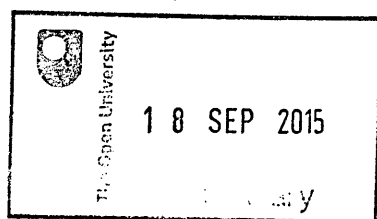
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Abstract

This thesis focuses on how voice is experienced and expressed in a telecollaborative project using Skype to connect two groups of English language learners of primary age across two different countries. Voice is understood as a social semiotic phenomenon which takes as its base the ideas of Bakhtin (1986) and Goffman (1981) and is expanded to include multimodal forms of expression through the work of Kress (2003). This social semiotic notion of voice is synthesised with a framework of mediated action from Vygotsky (1978) and Wertsch (1991). The theoretical view of voice frames a small-scale qualitative study on how voice is expressed materially involving tools such as verbal language, body language, technology, and the spatial and temporal characteristics within which the communication takes place.

As this is an area that has not been widely researched, a methodology had to be designed to analyse the video recorded data and a framework based on Scollon and Scollon's (2003) concept of geosemiotics was developed. This method of analysis investigates how language is materially assembled through interaction with others in the physical world around us. It has been rooted in a social constructivist paradigm to shed light on how multimodal expressions of voice through Skype can support children's second language use.

The study shows that webcam-mediated online communication creates particular sets of conditions which affect the ways children are able to express their voice. Some points of divergence from familiar patterns of communication include how children use different spaces to negotiate different ways of being together, the multimodal ways in which children are able to express their voices and the diverse ways in which interpersonal distances can be represented and manipulated to manage conversations. The implications drawn out in the conclusion should initiate wider discussion in early childhood education and second language learning practice and research concerning the importance of adopting a multimodal perspective on how children express voice to support their communication in video conferencing environments.



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1.0 Introduction

As a teacher of English to speakers of other languages I look for opportunities in which students can communicate with each other. Using their language in a meaningful context becomes a way for children to make their learning visible and tangible. Video conferencing technology provides a different opportunity for language learners to use their communication skills. I am interested in how this context for communication might influence the ways in which young language learners are able to give voice to their ideas. The following thesis sets out to explore this question.

1.1 The initial impetus for this research

Diane: Sweetheart, do you remember last night when you woke up, and
you said "They're here."?

Carol Anne: Uh huh.

Diane: Well, who did you mean, who's here?

Carol Anne: The TV People.

(*Poltergeist*, 1982)

In the 1982 film *Poltergeist* a young child is tempted away from the safety and security of her family by the flickering blank screen of the television and the evil that lurked within it. Sefton-Green (2004) observes that this emotive imagery depicts the intrusion of technology into the family home to control a young child's mind. While this is clearly a fictional representation of the relationship between child and screen, it represents a negative view that was widespread at the time concerning the role that communication technology might play in children's lives. In the present day, however, screen-based technologies have become an increasingly important arena for communication. The prospect of engaging others in real time communication using the internet is accessible to anyone with a computer, a webcam and speakers, so the possibility of talking regularly with people from far away locations is growing exponentially (Hauck and Youngs, 2008). Today many children engage with screen-based activities in their homes and with their friends

(Sefton-Green, 2004). One might, therefore, expect a more positive perception of the relationship between children and screen based technology than that portrayed in the film *Poltergeist*.

The uptake of information and communication technology (ICT) by young learners in informal settings invites the question of how this tool might be used to support learning in the classroom. Among other things, computers provide classroom communities with opportunities to connect with one another. Forging learning partnerships with children from different schools would seem to offer advantages. Encouraging young learners to talk together online provides cognitive and social stimulation, for instance, and also adds to their interaction around the learning goal. Technology would appear to present educators with the golden key to digitally enriched student-centred learning environments (Hermans *et al.*, 2008). However, Hermans *et al.* (2008) point to the persistence of teacher centred approaches to learning which, they believe, leads to a mismatch between innovation and the adopted style of pedagogy. The authors characterise teacher-centred approaches as having a high degree of control over the learner whereby information is delivered through didactic, teacher directed instruction. This approach is considered incongruent with any interest in how communication technologies are supporting children's learning because it fails to acknowledge that many children have already developed competencies in using screen based technologies in situations outside of school (Sefton-Green, 2004). Failing to acknowledge these competencies means that communication technologies remain a largely unexploited resource in the classroom (Hermans *et al.*, 2008). Moreover, children's out of school activities are self-directed for a real purpose that takes them beyond the teacher controlled simulated learning activities that the classroom often has to offer.

As a language teacher conducting research in my place of work it seemed a natural step to consider how the wider learning environment beyond the classroom walls might interface with class based learning activities. Young children often wish to enrich classroom dialogue by sharing their experiences from a variety of non-structured places of learning such as the playground, the theatre, museums, or galleries. If we acknowledge that these experiences all have a part to play in children's learning then it would follow there is also a role for informal learning through children's immersion in computer-mediated activities with others.

Such a gap between children's technologically rich activity in the home and their technologically impoverished activity in school is not something that is unique to my own institution; an international school in Portugal (Conole, 2008, Levy, 2008, Prensky, 2005). There is a predicament for young learners who have access at home to a new generation of digital tools and communication technologies. These tools allow children to engage with other children from around the world yet school is not the primary site for optimising on such opportunities.

At the international school in Portugal where I presently work there has been a significant increase in the number of students who speak Portuguese L1¹ over recent years which has been met with a fall in the number of international students. As a result the children less frequently encounter a real need to communicate in English (their L2). Finding ways of promoting children's L2 in the school is therefore a matter of growing importance. The provenance of this research was the task, given to me by my Headteacher, of exploring ways of forging links with our wider global community through telecollaborative projects. As an international school, the institution has developed many connections around the world over time through the movement of people who are affiliated with the school. This remains a largely untapped resource for enriching the education that we provide to our children. Thus, I sent a potential outline and rationale for an online collaborative project to schools with which my institution had existing links. From the four schools that responded positively I chose to work with a school in England as there is no time difference with Portugal which facilitates synchronous meetings online. The project ran over two academic years (September 2011 until June 2013) and involved two schools, a class teacher from England, a class teacher from Portugal (myself) and two cohorts of children.

To link up the two groups of children my English colleague and I decided to use Skype as the tool was familiar to most of them. However, the online learning space provided by Skype differs from that of the traditional classroom. Pedagogy and task design needed to be adjusted to make the most of the opportunities that this kind of space provided the children. There was an emphasis on team

¹ I have used the term 'first language (L1) students' to refer to children who are speaking in the first language that they acquired and the language that is used in the home. This term is different to 'second language (L2) students' who are using and learning an additional language to the means of communication used in the home (Byram, 1988, Soltero-Gonzalez, 2009).

activities and collaborative learning. This study, therefore, explored the affordances that Skype video conferencing technology offered young language learners from England and Portugal as they used this tool to engage their voices in a school project and learn together at the fault lines where media use in the home converges with media use in school. The outcome of our work using video conferencing technology is presented in this thesis.

1.2 The context and focus of the study

Discovering how children express themselves through webcam-enhanced communication is becoming increasingly important for teachers of language and culture, as this means of communication offers students abundant opportunities to focus on meaning as well as on form, developing their grammar and their pronunciation skills in interaction. Moreover, as student learning activity is increasingly motivated by social interaction with other children there is a need to design tasks that break with traditional notions of teachers as presenters and students as the audience (Conole, 2008). Teachers are being challenged to forge new skills in language lessons by embedding intercultural dialogue and the development of children's ICT skills (Council of Europe Committee of Ministers, 2006, Department for Education, 2003). They are encountering the opportunity and the need to move their practice beyond delivering face-to-face teacher-led lessons in the classroom. How the design of the task affects the ways in which children talk together through video conferencing is of interest to this current research.

Recent research supports the move to expand classroom practice beyond traditional pedagogic interactions (Wolfe and Flewitt, 2010). It is suggested that traditional approaches to learning promote unequal opportunities for children as some find it easier to learn the particular ways of communicating in school than others. In the school classroom conversations tend to be dominated by the teacher who holds the floor, defends it from interruptions and allocates it to students. This form of teacher-led recitation, first identified by Sinclair and Coulthard (1975), can be broadly characterised by three parts: an *initiation*, often made by the teacher in the form of a question, a *response*, in which a student supplies an answer, and *feedback*, during which the teacher feeds back on (and often evaluates) the student's response. While the three moves in the Initiation, Response, Feedback (IRF) structure of classroom discourse might take on a variety of forms and functions,

this genre of talk is likely to be different to conversations outside of the classroom in which different speakers may initiate a topic, and people will speak simultaneously and to multiple audiences. There might also be different ways of listening. Traditional Western classroom organisation can be confusing to children with different communicative traditions (Levy, 2008, Marsh, 2003, Neuman and Celano, 2006, Ripley and Yuill, 2005, Soltero-Gonzalez, 2009, Warrington *et al.*, 2006). Learners of English as an additional language (Soltero-Gonzalez, 2009) are highlighted along with boys from low-income families (Neuman and Celano, 2006) and children with learning disabilities (Ripley and Yuill, 2005) as being potentially disadvantaged due to differences in their ability to access instructional language and behavioural patterns.

As Levy (2008) points out, finding ways of communicating that are congruent with patterns of communication from outside of the school can facilitate children's learning. Digital channels such as email, instant messaging, chat rooms, newsgroups, blogs, wikis, audio podcasts, video conferencing and YouTube to name but a few, integrate various ways of making meaning and offer new opportunities for interactivity. Being a successful communicator in these settings requires combining different ways of communicating, or using *multiple modes* of communication to create meaning (Snyder, 2001). Technology is, therefore, providing new spaces and new ways in which learners can express themselves in communication with new and dispersed communities of language users. Video conferencing potentially provides children with opportunities for learning that contrast with those found in formal classrooms. The nature of interaction online emphasises activities that are more social, informal and less structured (Sefton-Green, 2004). The present research is therefore also interested in how children's conversations through Skype affect the ways in which they are able to think together.

In addition to offering a broad range of resources for expressing a speaker's thoughts, communication technologies connect learners in a variety of public and private conversational places. These places include formal spaces (for example when used at work, at a college or in a school) and informal ones (such as their use at home, on a train, in a park or other areas where the social expectations of language and behaviour might differ from those found in formal situations). Conversing online can happen anywhere which means that classrooms are not necessarily the only

form of learning space. As technology becomes a natural component of children's lives it provides them with access to a variety of learning activities outside of the classroom. Online communication can, therefore, draw on children's previous learning from both leisure pursuits and formal (school) practices (Gillen and Barton, 2009) thus broadening the language and behaviour patterns available to children. Online contexts allow children to combine experiences in school with their lives outside of the classroom. By forging connections between children's interactions in school and outside of school communication technologies give them greater choice over the ways in which they express themselves. In this way, connecting home and school experiences of communication provides greater opportunities for those children who are disadvantaged by traditional classroom interaction to have their voices heard.

One anticipated effect of these developments is a reduced emphasis on the role of more formal writing and texts in the learning process. As McLuhan (1962) predicted, the rise of communication technologies would seem to give greater prominence to multimedia, redressing the balance between oracy and writing concerning how children express their thinking. McLuhan believed that the greatest detriment of the alphabet has been its prioritising written and text based forms of communication over other ways of exchanging information. As McLuhan notes 'the fact has nothing to do with the content of alphabetised words; it is the result of the sudden breach between the auditory and visual experience of man' (1964, p. 86). Conversely, participants in online exchanges have more choice over the way messages can be expressed to others because the integration of multiple modes of communication takes the emphasis away from the alphabet and linear writing and reasserts the role of audio and visual channels in communication. Through electronic media we are able to blend haptic, auditory and visual spaces. The use of video conferencing software on a touch screen, for example, enables the user to combine haptic, verbal, gestural, prosodic and written signs, to converse with others online. The multisensory ways in which students can express themselves in this context and create new knowledge presents a break from the dominance of text based ways of communicating learning such as essays, tests or exams that have characterised traditional classroom practices.

There is, therefore, a need to move beyond a learning system in schools that places written texts at its core and begin to recognise the multiple ways in which children can express themselves and the importance of interaction for learning. This need is reflected in current curriculum developments for the two countries involved in this study; England and Portugal. The final report for the Independent Review of the British Primary Curriculum supports the development of new learning contexts in a bid to ensure that all students' voices are heard in the classroom (Rose, 2009, p. 2). Moreover, the report suggests that the term 'oracy' be used to replace the terms 'speaking and listening' to place greater emphasis on learners' engagement in dialogue to advance their thinking across all curriculum areas (Rose, 2009, p. 56). The premise that children approach learning with agency and have a need to construct their knowledge through communication with others is similarly expressed in the Primary curriculum for teaching English in Portugal. The curriculum is focused on developing communicative competence so that children can take their first steps towards self-expression. As Dias and Toste (2006, p. 5) put it: '*o desenvolvimento da compreensão oral é de importância crítica para que, posteriormente, a criança possa começar a ensaiar os primeiros passos na expressão*' (*the development of oral comprehension is of critical importance for children to begin to take their first steps in self expression*).

However, despite growing attention being given to alternative ways in which children can express their learning, the literature is only now starting to develop an understanding of how young learners express themselves in online spaces. This present study accepts as a premise that technology changes the classroom and how it operates. Online sites allow for different ways of interacting with a much wider community of learners and experts who can be in dispersed locations. An integral part of this shift in perspective is the idea that children approach their learning with a sense of agency and have a need to express themselves in a range of contexts. Consequently, this study begins with the supposition that voice conceptualises the way in which people produce meaning during online exchanges and, in particular, video conferencing environments.

I define voice as the ways in which 'people use language and other semiotic means in attempts (...) to make themselves understood by others' (Blommaert, 2008, p427). The individual character of a person's voice is transmitted through the choices they make over which signs dramatically

highlight and portray those aspects about themselves that they wish to express. For if the speaker's voice 'is to become significant to others, he must mobilize his activity so that it will express during the interaction what he wishes to convey' (Goffman, 1959, p. 40). However, the process of voicing our ideas is complex and unpredictable because what is expressed is not necessarily perceived or understood. How others experience a voice may not be the same as what the speaker intended. For instance gestures and signs can be misinterpreted, words can be misunderstood, and some communicative signs might go unnoticed by the respondent while unintentional signs of the speaker's thoughts or feelings might be conveyed by them. When people are involved in communication their voice potentially conveys information that they wish to express together with unintentionally conveyed information that the respondent experiences as part of the speaker's voice. Establishing meaning with others requires negotiation through dialogue making the expression of voice an inherently social process (Bakhtin, 1986):

[The meaning of a voice] always develops on the boundary between two consciousnesses, two subjects. The utterance is not a thing, and therefore the second consciousness, the consciousness of the perceiver, can in no way be eliminated or neutralized. A human act is a potential text and can be understood (as a human act and not a physical action) only in the dialogic context of its time (as a rejoinder, as a semantic position, as a system of motives) (p. 105).

Interlocutors build on each other's ideas in order to get things done in the social world. Consequently, voice is seen materially as the practical conversion of socially meaningful resources into socially meaningful action. For a speaker's voice to carry meaning it must communicate something to others and therefore be intrinsically dialogic, incorporating elements of addressivity and responsivity with regard to speakers in conversation with each other (Bakhtin, 1986, p. 105).

The focus of this investigation is on online communication mediated by video conferencing technology. This took place in Skype between students from two Primary schools in different countries who are second language (L2) speakers of English. Since studies of language, culture and communication would appear to neglect addressing children's use of voice in online

communication directly the present study examines the following first research question: *How is voice experienced and expressed in a video conferencing environment?*

Skype video conferencing provides a new space in which the children are able to express themselves in English. The discussion above suggests that the learning space created through video conferencing is different to the classroom space in which the children are traditionally given opportunities to communicate. How these differences might influence the ways in which the children are able to make meaning prompts a second research question to investigate the following: *What effect do the affordances of Skype have on how voice is expressed?*

The children's engagement with the learning task also helps to set the language agenda influencing their expression of voice. This chapter has drawn on Conole's (2008) work to suggest that the kind of tasks the students engage in need to suit the medium through which the children converse. The activities undertaken by the children will affect the ways they interact and must impact to some extent on what they express and how. The present study is thus interested in answering the following third research question: *How does the design of the learning task affect voice?*

The online conversation presents the speaker's point of view in action as it is positioned alongside the point of view of the respondents in the conversation, and so presents issues of how primary age L2 learners' voices engage to make meaning in this environment. This chapter has also discussed how Skype potentially allows children to engage in communication beyond the scope of the IRF structures (Mercer, 2000) that commonly characterise the classroom. A final aim of this research is to investigate the following fourth research question: *What role does voice have in helping children think together?*

2.0 Review of the literature

In this chapter I explore concepts relating to the theoretical treatment of voice in this present research and locate them within the literature. I argue that an analysis of how voice is experienced and expressed by children during video conferencing communication offers one approach to understanding the situated and distinctive ways in which they engage in dialogue. The key themes of voice, mediation, learning task and collective thinking are explored to determine the ways in which they underlie the research questions for the current study. I combine Bakhtinian theory with the ideas of Vygotsky and multimodal approaches to construct a theoretical approach to voice.

2.1 Voice

The concept of voice has been invoked in different ways to guide the research and teaching of language and culture, influencing the kinds of questions being asked, the research methods used and teaching pedagogy. The metaphor of voice is used widely to account for aspects of language and literacy such as writing style, authorship, register, rhetorical stance, written and spoken prosody, the self in text and discourse and more recently as it relates to interaction in digitalised environments (Sperling and Appleman, 2011). In the light of the broad way in which voice is understood isolating it in terms of a particular theoretical perspective is a difficult undertaking.

Ambiguity concerning the precise definition of voice has led to the term being abandoned by many current investigations into communication. Instead voice is being broken down into its constitutive elements by some researchers which are then studied in isolation, such as the study of speech prosody or discrete semiotic modes. Wertsch (1991) identifies two general perspectives that continue to underlie much of the existing research into voice today. They present broadly differing views on the way in which voice is understood. The first is that voice is a fixed quality located within an individual speaker, the second is that voice is a process acted out by responding to the social and historical voices of others through dialogue.

2.1.1 Voice as an individual expression of meaning

In the past voice maintained a secure position in the study of communication because of its pedagogical concern with rhetoric and elocution, and the perspective that words transmit

immutable and universally understood units of meaning (Rush, 1900). This view goes back to Aristotle and his ideas about the origins of speech which still find currency in the discourse of voice today. For Aristotle inspiration was inhaled down to the heart, which creates the impetus for speech (O'Neill, 1980, p. 37). The voice is the material cause of speech which connects the spiritual heart of a person to the physical world. In other words the voice acts as an intermediary between the thinking person and the world about us enabling the physical expression of the self. This line of thinking corresponds with the first perspective on voice. It posits that the voice is a fixed quality located within each speaker and its expression is seen as an individual accomplishment.

This view of voice as being grounded in universally recognised meaning and a conduit to reality garners some support from a recent report by the Language Policy Division of the Council of Europe. The report emphasises that the linguistic and cultural competence of a given speaker is 'single and unique' (Coste *et al.*, 2009, p. vi). The position of voice as an individual accomplishment is taken to protect and develop the diversity of languages and cultures in Europe. It is suggested that this diversity is particular to each individual and shapes their actions in specific communicative contexts.

Notions of a unique 'pupil voice' have been moved to the forefront of United Kingdom policy relating to young learners' participation. The statutory guidance (Department for Education and Skills, 2004) calls the attention of headteachers, governors and local education authorities to what young people have to say concerning decisions that affect them. More recently, in an attempt to acknowledge the importance of considering children's perspectives on education the Office for Standards in Education for England (2011) has reported that children's voice was not heard sufficiently in previous evaluations. Similarly, a series of videos posted on the European Council website (Priory School Media Group, 2011) hold the view that attention to student voice is integral to educational development.

This perspective also underlies a body of research which explores learners' experiences and opinions. Some key contributions to this literature include the work of Jisc (Joint Information Systems Committee e-Learning Programme, 2007). In support of the use of technology in the

Further and Higher Education sector of the UK, Jisc suggests that learners have their own unique and separate opinions concerning the education they receive, emphasising the need to listen to the experiences of all types and age groups of learner (Jisc e-Learning Programme, 2007). Conole (2008) elicits students' voices to evaluate ways in which they are using technologies. A study by Andrews and Tynan (2010) highlights the heterogeneity of learners' voices in contrast to teachers' voices to identify the causes for the high level of attrition on some online courses. The patterns that emerge through these studies from the students' common discourse and activity are considered evidence of coincidental agreement between their learner perspectives. These studies do not, therefore, acknowledge the role that shared dialogue concerning distance learning experiences might have on building a common view of distance learning and technology use. There is an assumption underlying the work of these authors that the participants are able to disclose their own individual ideas independently to the context in which these conversations happen.

Notions of pupil voice are presented in this literature as a unique and distinct alternative to practitioner or institutional voice. However, research to access children's 'true' or 'authentic' wishes and feelings relies on an over simplistic understanding of voice. Komulainen discusses the complexities of researching children's views and cautions against the perspective that 'children have message-like thoughts that can be exchanged, and intentions that match the situations defined by adults' (2007, p. 25). This tendency towards essentialising the learner's voice limits it to the spontaneous articulation of a fixed and original point of view (Kramsch, 2003). The conceptualisation of voice as a unique expression of a particular meaning does not recognise the following:

[W]henever we open our mouths, we not only use and re-use the words of others, but we also place ourselves firmly in a recognizable social context from which and to which all kinds of messages flow – indexical aspects of meaning, conventional (i.e. social, cultural, historical, etc.) links established between communication and the social context in which it takes place. (Blommaert, 2008, p. 428)

In other words this perspective fails to link the discourse to its larger social context by ignoring its dialogic relationships. Work such as that done by Blommaert (2008), Komulainen (2007) and Kramsch (2003) points to problems in defining voice if this does not take into account the social context in which a voice is expressed.

Despite this criticism investigations aimed at an authentic hearing of children's voices are reinforced by research showing that young people respond positively to opportunities for having their ideas and opinions heard concerning matters that affect them (Hill, 2006, Stafford *et al.*, 2003). Such research does have a tendency to be biased towards this outcome as children who are supportive of having their views heard are more likely to opt for involvement in this type of project. Despite the chances of bias, a strong body of evidence suggests that children welcome opportunities to engage their voices and be heard (Grover, 2004). Children's desire to initiate and drive interaction with others has, therefore, helped to drive researchers' interest in exploring children's voices. Studies from a variety of research backgrounds employ strategies to minimise the influence of the researcher over the learners being researched, allowing them to set the agenda and take the lead in conversations (Andrews and Tynan, 2010, Conole, 2008, Department for Education and Skills, 2004, Flewitt, 2005, Grover, 2004, Jisc e-Learning Programme, 2007, Lewis, 2010). Through these means it is hoped that learners' individual voices can be heard and their wishes and feelings promoted.

Another body of research connected to this broadly conceived focus on the individual voice asks how people use particular linguistic resources (Johnstone, 2000). What is often identified in this research when students express themselves are stylistic and functional characteristics that are seen as a feature of voice: the use of pronouns (Lorés-Sanz, 2011), tonal qualities (Nygaard and Queen, 2008, McKinney and Swann, 2001) or the use of affective semantic cues (Dupuis and Pichora-Fuller, 2010) for example. Yet by focussing on the role of a specific speaker or writer in achieving voice the corresponding role of the listener is again overlooked.

In research relating to the perspective of a unique pupil voice a transmission model is created in which stylistic and functional characteristics of voice produce a discrete unit of meaning which is sent to the receiver who decodes it (Wertsch, 1991):

The basic outlines of [this] metaphor [...] consist of the following points: 1) language functions like a conduit, transferring thoughts bodily from one person to another; 2) in writing and speaking, people insert their thoughts or feelings in the words; 3) words accomplish the transfer by containing the thoughts or feelings and conveying them to others; and 4) in listening or reading, people extract the thoughts and feelings once again from words (p. 71-2).

The unit of meaning remains constant throughout the process. These positivist ideas on voice connect it firmly to language. Voice when expressed through language is thought to provide the conduit through which an individual's consciousness becomes accessible to others. However, this view does not account for which particular meaning might be made and how meaning might be made in different ways by different people. The perspective taken in this present research project does not follow the view that voice is a fixed quality inside each individual speaker because this view underplays the role of dialogue in shaping a speaker's voice.

2.1.2 Voice as a dialogic process

In contrast, the second broad perspective on voice would suggest that the ability to express ourselves is not as straightforward as it might seem. It posits that children's voices are affected by how they are positioned within institutionally configured conversations, interactions and encounters with diverse texts. In this present research voice is considered to be materially placed in the world, manifested through people and the environment they inhabit (Scollon and Scollon, 2003). From this perspective not considering dialogic interaction silences the student's voice by removing it from where it is located in response to the voices of others. The present study is therefore aligned with a view of voice as being constructed alongside the voices of others through dialogue.

A theoretical treatment of voice as a socially and culturally mediated phenomenon begins with the work of Bakhtin (1986). Bakhtin's ideas offer valuable insight into the dialogic layers that comprise children's voices. All speech is thought of as being composed in response to either a voice heard in the particular moment or one heard at some other time and place.

In reality [...] any utterance, in addition to its own theme, always responds (in the broad sense of the word) in one form or another to other's utterances that precede it. The speaker is not [the Biblical] Adam, and therefore the subject of his speech itself inevitably becomes the arena where his opinions meet those of his partners (Bakhtin, 1986, p. 94).

When a listener perceives the meaning of speech they simultaneously take a responsive attitude towards it by agreeing or disagreeing with it, elaborating it, applying or analogising it and so on. Any understanding informs the ensuing speech intentions of the listener. This quality of an utterance of being directed to someone is its 'addressivity' (Bakhtin, 1986, p. 95). Voice is seen as having both an author and an addressee. This addressee can be an immediate participant in everyday dialogue or an indefinite, not present other located elsewhere in time or space. The way we choose to express ourselves depends on those whom we are addressing, how we sense and imagine the addressee to be and the semiotic resources available to us. In this way, from the very beginning of an exchange the perception of the speaker forces their effect on the subsequent utterance of the listener.

Thus addressivity, the quality of turning to someone, is a constitutive feature of the utterance; without it the utterance does not and cannot exist. The various typical forms this addressivity assumes and the various concepts of the addressee are constitutive, definitive features of various speech genres [...]. The choice of *all* language means is made by the speaker under varying degrees of influence from the addressee and his anticipated response (Bakhtin, 1986, p. 99).

Bakhtin (1986) defines an utterance as 'a link in the chain of speech communication of a particular sphere' (p. 91). Mahiri and Sablo (1996) follow Bakhtin's theoretical view of voice as it relates to the style of an utterance in their study of the language development of California's marginalised

urban youth. An utterance is defined as a delimited section of speech in which the interlocutor's language is realised (Bakhtin, 1986). In other words an utterance is the language performance of what a speaker wishes to say, subject to the patterns of addressivity and responsivity referred to above.

The notion of voice as language performance calls attention to its function as a concrete resource which is differently distributed between speakers in terms of access and command, and to differences in how people express their voice which leads to different value attributed to their talk. The concrete modes of the appearance of language are of particular importance to L2 speakers of English as their voice may be considered not only an object of difference, but one of inequality as well (Blommaert, 2008). The linguistic, social and cultural complexities involved in a speaker expressing their voice in the complex chain of communication that constitutes dialogue, therefore, presents a particular kind of challenge for children communicating in their L2.

Studies of L2 students have suggested that the process of finding voice can involve reworking cultural voices that they might not associate themselves with (Mahiri and Sablo, 1996). In this body of research voice can be seen to either serve or silence L2 students' communicative activity (Kabuto, 2010, Fernsten, 2008, Hirvela and Belcher, 2001, Thesen, 1997). Providing children with ways of expressing themselves in a restricted sphere of social activity, such as academic English, gives L2 students a limited choice over the social positioning they want to adopt. Utterances encountered in the context of academic activity will either fit and give voice to, or conflict with and silence, a student's ideas. The uptake of the L2 by students is in part dependent on whether the voice they are able to construct in the target language corresponds with the way they wish to engage their voice with others. Learning a new language is therefore understood to have social and cultural implications connected to the learner's self-perception. Speaking a language involves not only the correct application of grammatical rules and cultural conventions, but the articulation of the language learner's personality in the learning process. Considering how to 'unsilence' these voices has prompted some researchers to investigate the out-of-school practices of students. Mahiri and Sablo (1996) discovered that the students in their study engaged in a rich variety of communicative activities outside of traditional academic practices and did not identify these with

the traditional school curriculum. Despite failing to participate in school-based language activities the students were found to be engaging their voices with others in creative ways outside of the classroom. It can be concluded from these findings that there is educational value in empowering L2 learners to express, create and control their own communication. Child-driven conversations allow children to explore what it means to take on different roles in the social world. They are able to engage their voices with others to become closer to them, or use their voice to distance themselves from what other people have said.

Voice also contains a further layer of 'double-voicedness', through which we appropriate and reproduce the voices of others as though they were our own (Bakhtin, 1986, p. 110-11). In so doing we are able to 'express our relation to the person who would speak in this way' (Bakhtin, 1986, p. 110). By taking on the voices of others we are able to align ourselves with the position conveyed through the utterance, or distance ourselves from it according to the style we use to express it. This aspect of dialogism suggests that an individual's voice is permeated with their own particular meaning through the way it relates to the voices of others. Thus, a child adopting the communicative genres of the teacher in the classroom might be playing a role, demonstrating what they have learned from them, or making light of them depending on the context and particular way in which they choose to express the appropriated voice. The ways in which this process of voicing is stylised, therefore, carries different associated values and positions. By manipulating the ways in which they are aligned with the voices that they assume a speaker finds the material means to influence the way their own voice is understood.

The same understanding of how children make meaning in and through interaction is reflected in interactionist (Goffman, 1981) views on social reality. For Goffman (1981) a speaker's voice constitutes the rhetorical choices made during an exchange. This process is both creative and selective, as someone is the author of their own words while at the same time choosing from and reproducing the sentiments that are being expressed through the prior utterances of self and others (Goffman, 1981, p. 144). A speaker's voice is, thus, influenced by addressivity. Addressivity is an important concept in the context of children's interaction through Skype. It describes how a voice is always constructed in response to the information expressed in previous conversation(s). During

webcam-mediated child-led communication the verbal contributions of one speaker are, in part, contingent on what is expressed by their partner during their talk. As Goffman (1959) puts it:

We can appreciate the crucial importance of the information that the individual *initially* possesses or acquires concerning his fellow participants, for it is on the basis of this initial information that the individual starts to define the situation and starts to build up lines of responsive action (p. 22).

The onus is on the speakers to engage in a more spontaneous and creative way towards their partners than they might if they were participating in a 'question and answer activity, following scripted dialogue or recycling lexical items in a prepared context for example. For both Goffman (1981) and Bakhtin (1986) the semiotic means for expressing voice is restricted to linguistic resources. Although they both acknowledge the role played by other forms of communication, neither Bakhtin nor Goffman consider these forms of expression as part of the speaker's voice.

For the purposes of this current research there is a need to expand the concept of voice beyond language to include other semiotic means by which people are able to make themselves understood, such as gesture or eye gaze for example (Blommaert, 2008). The principal interest of this present research is on how children are able to experience and express voice in a video conferencing environment. The children in this study are seven years old and still developing as language users in their L1, moreover, the children are conversing in their L2 through Skype using a variety of semiotic means. Early work exploring children's language acquisition by Bates *et al.* (1975) has established a tightly coupled developmental relationship between gesture and spoken language. Bates discovered that a great many of the lexical items that a child produced initially in gesture later moved to their verbal lexicon. Changes in gesture were seen to both predate and predict changes in language, suggesting that early gesture leads the way for verbal language development.

Iverson and Goldin-Meadow (2005) suggest that gesture enhances a child's voice by indicating to their communicative partner that they are in need of some kind of verbal input. In other words the gesture fills the space left in a verbal utterance by an unknown lexical item, which may or may not be supplied by the respondent in the conversation. This view of gesture fits with the traditional one

of its serving mainly addressee directed communicative functions like promoting understanding or regulating turn taking (Gullberg, 2010). Yet, this relationship between gesture and spoken language has been shown to continue once children are able to speak, suggesting that gesture is not replaced by spoken language in early language development. Rather, embodied actions are used alongside verbal language to communicate (Hall *et al.*, 2013).

Thus, a growing body of research suggests that gesture also serves speaker directed functions, such as lightening the cognitive load. This aspect of gesture might be important to L2 speakers of English as gestures lessen the demands on children's memory (Iverson and Goldin-Meadow, 2005, Gullberg, 2010). The act of pointing to an object is cognitively less demanding than producing a word for it. Children, therefore, can express more through the use of embodied actions such as gesture than through verbal language alone. New meanings that are not able to be expressed verbally can enter into children's communicative repertoires in this way. These meanings can be experimented with in a context, paving the way for their eventual appearance in speech (Iverson and Goldin-Meadow, 2005, Hall *et al.*, 2013).

In addition, gesture may play a role in language learning by allowing the learner to exploit representational resources other than speech. Gesture and speech form part of an integrated system of communication at a neurological level (see Gallese, 2007) which means that in certain circumstances an understanding of language relies on its embodiment. According to the embodiment theory, for action related utterances the parts of the brain responsible for executing that action should also play a role in understanding the meaning of such actions when they are verbally described. However, despite the close association between the multimodal experiential knowledge of our own lived bodies and verbal language, gesture exploits representational resources other than speech. Meanings which are better suited to kinaesthetic representation might be easier to express through gesture than through speech. This means that embodied forms of communication do not just substitute verbal language, they expand the range of meaning making strategies available to children. Gesture is not used in place of voice rather it is an integral part of it that functions alongside spoken language to express what children wish to say.

The accumulated research evidence would suggest that embodied actions have communicative functions that serve both the speaker and the addressee. Although there is some debate over the predominant function of gesture there would appear to be agreement over the fundamentally social foundations for the development of gesture alongside speech to express children's voices. The findings described above support further investigations into children's voices to employ a concept of voice that goes beyond verbal communication to include other modes such as gesture. To be properly understood the modes of communication that comprise children's voices need to be studied as they are purposefully employed in interaction with another person. Cassell and Ryokai (2001, p. 170) discuss the importance of adults engaging children's voices in dialogue and listening to them, rather than talking at them and expecting their voice to be repeated back. Cassell and Ryokai's argument would, therefore, support Mahiri and Sablo's view discussed above. Cassell and Ryokai similarly make the point that child-driven dialogue gives children the control to decide what can be communicated and how, giving them the freedom to select ways of expressing themselves that are suited to their wishes and their level of development.

An environment in which children are engaged in communication that is meaningful to them and in which they are able to combine verbal speech with other forms of communication would, therefore, seem to help young language users develop their ability to express themselves. In schools technology provides opportunities for speakers to combine different modes of communication to express their ideas to others beyond the immediate classroom.

Skype brings a visual medium as well as an aural one to synchronous communication over distance. Hence, the learning space created through Skype, as well as other online contexts, could be an effective way for L2 students to study English and develop their voice. In recent years a considerable amount of learners' academic and leisure activities have moved to online spaces (Gillen and Barton, 2009, Meneses and Mominó, 2010). Learners have been found to be more frequently composing original texts online (be they oral, visual, written, haptic or a combination of these) (Snyder, 2001) for both academic and social purposes, and engaging in reading for both information and pleasure in online contexts rather than traditional ones. Digital texts that express the speaker's rhetorical point of view reflect both the tools for mediating online communication as

well as the background against which voices engage. The material means for expressing one's voice in this context must again be expanded beyond consideration of linguistic resources to include *the silent language* (Hall, 1959) of paralinguistic or real time concrete spatial features that may be selected by a communicator to express their thoughts. Skype gives children opportunities to represent objects, actions and feelings with something that stands for them. Through fostering the development of children's symbolic imagination and providing a space in which it can be exercised, video conferencing between young learners can help to pave the way for understanding the systematic ways in which semiotic objects can take on social or affective purposes (Cassell and Ryokai, 2001, Lancaster, 2001). In this study I will try to show that a function of this technology is to provide a space in which children who might not otherwise meet are able to engage in child driven dialogue to express and explore their own voices.

While dialogic theories of how people communicate with each other have provided an effective grounding for studies into language learners' use of language and culture (Byram and Kramsch, 2008) they do not account for the range of semiotic systems needed to make sense of everyday life, particularly in the expanding contexts provided by web technologies (Street *et al.*, 2009). A view of voice as being simply comprised of verbal language fails to attend to the full range of communicative forms (or multiple modes, such as image, gesture, gaze, posture and so on) that children use to express themselves as well as the relationships between them. Street *et al.* observes that failing to acknowledge the multimodal composition of children's voices in schools de-privileges those who are already drawing on a number of different modes to make meaning (Street *et al.*, 2009, p. 195).

Drawing on theoretical and empirical literature, voice in the present study is considered to be the actual physical way in which children express their thoughts and ideas. Skype video conferencing software provides a new cultural tool that enables the orchestration of a whole range of meaning making resources in new educational situations. An investigation of voice in this environment must take account of the full repertoire of meaning making resources rather than focussing on linguistic accomplishments. Voice is therefore seen as the practical conversion of socially meaningful resources into socially meaningful action through dialogue. This theoretical view describes the way

in which voice will be treated during this present research. The concept of voice as being socially produced from the multimodal resources available to the speakers will be drawn on in particular to answer the research question: *How is voice experienced and expressed in a video conferencing environment?*

2.2 Mediation

The interplay of voices described by Bakhtin (1986) focuses on language as the means for mediating interaction. Wertsch (1991) synthesised Bakhtin's notion with a Vygotskian (1978) framework of mediated action to produce a broader model of the way in which people interact with the world to give voice to their ideas. Both Vygotsky and Bakhtin believed that human communicative practices give rise to mental functioning in the individual.

Prior to mastering his own behaviour, the child begins to master his surroundings with the help of speech. This produces new relations with the environment in addition to the new organisation of behaviour itself. The creation of these uniquely human forms of behaviour later produce the intellect and become the basis of productive work: the specifically human form of the use of tools (Vygotsky, 1978, p. 25).

Goffman (1981) also describes how the way in which people use the tools at their disposal (their bodies and other material means) in the presence of others signals the type of social role they are assuming and the actions that they will take. The distances that are maintained between people, the way in which gaze is used, the clothes that are worn, the responses they anticipate, and how they interact with the physical spaces where people live all contribute to what they wish to say. All communicative acts involve the use of tools, which can include everything from hammers to metaphors (Wertsch, 1991). Mediation as it is defined in this sense, and for the purpose of this investigation, refers to the use of semiotic resources (such as language, gesture, time, space and other aspects of the lived in world) that can be called upon by a speaker to transmit their voice. These different modes for making meaning (or *semiotic modes*) have been investigated extensively in isolation, as vocal-aural or visuospatial modes to identify their role in mediating social interaction and activity (Sidnell and Stivers, 2005). However, combining the ways in which talk,

gaze, gesture and aspects of the material environment work together in communication to construct meaning and the mechanics that govern their orchestration has only recently started to be addressed in the literature (Dicks *et al.*, 2011, Jewitt, 2009, Kress, 2011). A holistic view of the ways in which semiotic resources combine to make meaning is important to discover what effect the affordances of Skype have on how voice is expressed in this study.

2.2.1 The affordances of Skype

The effective application of Skype for use with young language learners in an educational setting depends on the affordances of the technology and how these can be gainfully employed for teaching and learning. *Affordances* in this current research is used, in a similar way to Levy (2009), to mean the opportunities and limitations presented by a technology when used to mediate L2 communication in education. Skype is a free internet telephone service that enables people in different places to connect via their computers. The basic function of this software is to provide a general purpose platform for communicating using video conferencing technology or *voice over internet protocol* (VOIP) phone calling. When considering what video conferencing might bring to the ways in which children experience communication in the classroom it is helpful to think about how the telephone changed communication when it was first introduced. A striking effect of the telephone was the ability it gave people to talk with others synchronously over distance. Effectively, it reduced the impact that distance had over people's capacity to pass messages to each other. A salient feature of video conferencing technology is that it brings a visual medium to synchronous communication over distance, allowing the speaker as well as the immediate physical context in which a speaker expresses him or herself to be represented to their audience. Thus, what is striking with video conferencing is the way it captures and represents the material world through which the social world is communicated to others in discourse.

Since its release in 2003 Skype has become the most widely used VOIP service, being well supported (Mullen *et al.*, 2009) on a variety of devices and, therefore, easily accessible to anyone who wishes to use it. Both users simply need to have a microphone, speakers or headphones and the Skype software downloaded on to their computer to begin interacting. Due to its popularity and ease of access many students are familiar with Skype through using it outside of the classroom.

However, Levy (2009) observes that widespread acceptance and use of a technology does not guarantee its effective application in an educational setting. This is because while children might be communication technology *users* in the home, they are differently positioned as *learners* in school.

In order to use Skype video conferencing in schools with young learners effectively, the teacher has to take account of its particular strengths and limitations for facilitating interaction in their L2. Compared to traditional approaches employed in the language classroom Skype allows for new and different ways in which children can practise voicing their ideas in their target language. Skype software offers the use of the spoken mode, together with multiple other modes of communication (such as gaze, gesture and aspects of the material and projected screen environment), providing a breadth of mediational tools. In order to fully appreciate the different ways in which children are able to express themselves in a particular environment Kress (2003) suggests the need to attend to the different material ways in which we are able to make meaning. Skype allows for real time dialogue, supported by paralinguistic features and body language. The webcam enables objects and other material aspects of the immediate location of each speaker to be represented through the screen to each other. The Skype platform also enables users to share files and attachments, type text messages synchronously or leave them asynchronously for others. Additionally there is the ability to organise contacts and create groups. These affordances shape the ways in which the technology can be used. They offer opportunities for, and impose limitations, on children's expression of voice that differ to those found in the traditional classroom (Hampel, 2006). The ability to talk in real time with other children across a distance gives students the experience of simultaneously learning and using language in new and authentic situations. However, it can be challenging for children to suddenly become participants in a live conversation with a stranger using a medium that affects the ways in which visual channels of communication such as body language, facial expressions and gestures are perceived (Mullen *et al.*, 2009).

Moreover, the physical circumstances in which Skype communication takes place is likely to have an affect on the way communication is conducted, and the conduct of Skype conversations will have an important affect on how children express themselves in the material world of the classroom (Jones, 2004). Children manage being a part of a computer-mediated communication in a virtual

space while at the same time being members of a classroom community in the material world. Video conferencing technology as used in this study establishes different frames for interaction than those in which the interactants are physically present. Unlike face-to-face communication the conversing participants are represented to each other through the computer screen as images and signs, with which they can interact in real time. The space in which each partner converses is rigidly fixed and controlled by the webcam, microphone and computer screen. What is experienced or expressed by one person in the conversation might not be experienced in the same way by their Skype partner depending on how it is translated through the technology. Distance, for example is represented through proximity to the webcam and not the person in the conversation, and volume can be adjusted independently of the speaker through the sound equipment.

2.2.2 Voice mediation and online tools

To examine the ways in which voice is mediated during online communication, this study adopts the *heterogeneous tool kit* approach developed by Wertsch (1991). This approach posits that in any individual there exists not one homogenous psychological or material way of getting things done, but different ways. These diverse resources make up a person's *tool kit*. The capacities to draw a diagram, coin a suitable metaphor or introduce props are all examples of tools that might be drawn on to communicate something. They can be selected from and applied in different ways depending on how appropriately they fit a particular sphere of human activity (Wertsch, 1991). The notion of a heterogeneous tool kit is important to this current research as it makes the point that people have various options to select from when responding to a social situation, rather than a singular response bound to a particular mode of communication. Child-led communication through Skype might be considered different to more predictable patterns of classroom talk (such as question and answer, or drill patterns), as children have the freedom to choose from different options for expressing themselves within the constraints afforded by the technology.

However, a potential limitation of the *heterogeneous tool kit* approach is its seemingly impersonal approach to means and ends (McCarthy *et al.*, 2006). An assumption underlying Wertsch's approach is that people select from pre-established, socially recognised ways of dealing with the situation that exists, with little consideration of how they might creatively employ semiotic

resources to deal with what could be. In other words this approach assumes that individuals interact with each other through semiotic resources in a cause-and-effect type relationship and this overlooks the concept of agency in determining how people respond to social situations. A cause-and-effect approach to communication does not explain the differences between how people voice their thoughts and opinions. Nor does it explain why some attempts to communicate are more successful than others. Bandura (2006) states that 'to be an agent is to influence intentionally one's functioning and life circumstances' (p. 164). A core property of human agency is that people are seen as being proactive, self-organising, self-regulating and self-reflecting. They are neither passive onlookers of their behaviour nor pre-programmed respondents to social stimuli. They are resourceful and imaginative contributors to social situations, not just a product of them. The *heterogeneous tool kit* perspective generalises the mediational means employed by cultures to engage in social practices. Reducing the ways in which people engage socially to commonly used mediated responses overlooks the varying degrees of manoeuvrability, inventiveness, and reflective choice shown by social actors in relation to the constraining and enabling contexts of action (Emirbayer and Mische, 1998).

Wertsch uses the argument that people are 'individual(s)-acting-with-mediational-means' to try to bridge the divide between the individual and the social (1991, p. 12). By taking individuals who work with mediational means as the unit of analysis the focus is no longer the individual or the culture that they live in but a situated combination of the two. The advantage of this perspective is that both the individual and the mediational means are seen as agentive. Wertsch illustrates this idea with the question: Which navigates crossing the street, the blind person or the stick? The appropriate answer is that both the person and the cultural tool do (1991, p. 33). The difficulty in Wertsch's approach to analysis is in knowing where the individual ends and the cultural begins; how do you separate the person from the stick? An analysis of individuals working with mediational means necessitates making general comments about social life which involve a certain degree of reductionism.

Bakhtin (1986) offers a helpful perspective to resolve the dichotomy between the social and the individual by urging us to begin with experience rather than theory. Bakhtin recognises the

importance of culturally acknowledged tools in forming a part of someone's voice, but argues that these resources are individually shaded and toned when they are employed in a particular utterance. Both of these aspects of a voice cannot be divorced from one another as they depend on each other for meaning. For Bakhtin, cultural agency and individual agency are not mutually exclusive concepts but constituent parts of the embodiment of voice. From this perspective we might expect the interlocutor and the cultural tools (such as a computer, text chat, emoticons, classroom objects and so on) to affect each other when engaged in expressing voice, influencing what is expressed and how.

While conventional face-to-face instruction happens in classrooms mediated between participants and might include tasks, physical settings, institutional and cultural assumptions, time frames and language, the tools that we use to make meaning through interaction online are further expanded to include technology (hardware and software) (Lamy and Flewitt, 2011). Different social software impacts on language teaching and learning in different ways. By allowing teachers and learners to build and participate in multimedia collaborative learning environments, these programmes variously promote the creation and sharing of user profiles, encountering friends, engaging in instant messaging, posting blogs and comments as well as audio recordings, photos and videos. Moreover, the time frame for online exchanges can be variable, occurring either synchronously or asynchronously. The result is a broad variety of platforms that offer different potentials for meaning making. How and when these sites are used is being shaped by the spheres of human activity to which they are applied, while at the same time shaping the way meaning can be mediated within these spheres (Marsh, 2003).

Even though online collaboration between language learners is seen to be mutually transformative (Meei-Ling and Master, 2010), integrating internet-based learning environments into classroom practices remains an issue (Levy, 2009). Traditionally school structures are geared towards individual performance with the teacher determining what is considered valid knowledge and how that knowledge is managed (Haste, 2009). Conventional models of computer use in education follow this behaviourist pattern emphasising fact finding activities that replicate traditional

classroom practices (Charbonneau-Gowdy *et al.*, 2009, Dal Bello *et al.*, 2007, Harrison and Thomas, 2009).

The use of computers for collaborative online learning between language classrooms rather than for fact finding suggests the transformation of pedagogy towards learning as a learner-centred socially constructed process (Harrison and Thomas, 2009). Work from anthropology and sociology (Bateson, 1972) and research taking constructivist approaches towards social reality (Harré, 1993, Shotter, 1993) support this alternative view. The model of learning that is produced removes the locus of control from the teacher and distributes it between the participants. A 'bottom up' approach to pupil development emphasises the role of pupil agency with the help of tools, such as the computer and language, to accomplish a task. The concepts of mind and mediated action given by Vygotsky (1978) and Wertsch (1991) can be applied to the transformative potential of the computer as a cultural tool. Mental activities such as memory and reasoning are socially distributed and defined by the mediational tool used to carry out such activities. The introduction of new communicative means, such as that provided by social software, will necessarily transform the way mental activities can be socially accessed and orchestrated. For Jewitt *et al.* (2001) learning in this environment must take account of the full repertoire of meaning making resources rather than focussing on linguistic accomplishments.

An important focus of the study will thus be how these semiotic resources are used by students to transform their capacity to converse together online during the set task. Skype provides a new context for social action with different opportunities and limitations on how voice can be mediated in this environment. For the purposes of the current study the process of voicing ideas must account for personal agency in the way children are able to proactively and creatively navigate these contexts. Rather than an analysis of interaction, the focus is to chart the different ways in which children's voices are mediated during their encounters online through Skype. Video conferencing software provides a new cultural tool that enables the orchestration of a whole range of meaning making resources in new educational situations. Identifying patterns in the employment of these resources when the children are talking on Skype will reveal answers to the research question *What effect do the affordances of Skype have on how voice is expressed?*

2.3 Learning task

The discussion above argues that technology use does not directly result in learning. That is, children do not learn from computers, books, television or other devices used to transmit information. Rather, learning is mediated by thinking and articulated through voice (Cassell, 2002). These mental processes are activated by learning activities which in turn are mediated by instructional intervention, including technology and the design of the learning task. While technology provides the tools to transform the ways in which learning can be expressed, its impact on learning is restricted without the effective application of these tools in class based activity. In order to investigate the ways in which voice is articulated, therefore, it is also important to consider how learners interact when undertaking certain tasks and how tasks mediate interaction.

Skype software offers the use of the spoken mode, together with multiple other modes of communication (such as gaze, gesture and aspects of the material and projected screen environment), providing a breadth of mediational tools. It is therefore easy to assume that the way in which the task can be treated by learners, teachers and the researcher is much the same as in the context of face-to-face conversation. However, task design must pay attention to the materiality of the resources in the computer medium as they are different to those available in the traditional classroom (Hampel, 2006). Differences in the material matter available to make meaning impacts on the affordances that these tools offer. Therefore, a simple transference of tasks from face-to-face to virtual environments is unworkable. The need to be able to match tool to task is a growing pressure on teachers and learners as their potential mediational tool kit expands (Levy, 2009). An important aim of this research is to identify the ways in which learning task design also shapes the way in which voice is expressed. It is essential to know the differences between technologies in relation to their appropriate fit for use in different language learning activities.

Ellis (2000, p. 212) distinguishes the broad outcomes of task-based instruction as falling under either 'L2 acquisition' or 'communicative effectiveness'. These two different learning goals are reflected in the literature by two equally broad theoretical accounts of language learning (Ellis,

2000). One is referred to as the *psycholinguistic* approach. In the context of task design this relates to objectivist views which assume that relevant knowledge and truth exist outside of the mind of the individual and are, therefore, objective. The role of education is to embed a particular body of knowledge in the learning task for transference to the learner in any context (Tam, 2000). Tasks are seen as devices that provide learners with the necessary information for learning. The design of a task delimits the language used and subsequent opportunities for learning. Psycholinguistic models, therefore, assume that features of the task design will determine how learners will respond and so develop a specific area of language learning. This model is often, although not exclusively, aligned with the goal of L2 acquisition (Ellis, 2000).

The second account is based on *sociocultural* theories. It describes learning as a change in thinking constructed through interaction with others. This approach assumes that knowledge and meaning are constructed by each individual according to their own frame of experience (Vygotsky, 1978). Similarly, social constructivist theories stress the importance of social and cultural factors in learning (Wertsch, 1991). This perspective emphasises the role played by negotiation and collaboration in developing new skills and understandings (Hinckey, 1997). This is very different to the psycholinguistic or objectivist account of learning.

While it may be possible to plan the broad themes and skill sets that can be drawn from during the online interaction and apply them to the particular design of the tasks, in this present research the focus is on human agency in shaping and reshaping the task (Newton *et al.*, 2010). In addition to the language agenda set by the task, communication is also dependent on the lived experiences that learners bring to the learning environment (Liddicoat *et al.*, 2003). There is an increasing realisation among researchers and education policy makers that the cultural and social realities of assuming a new language should be an integral part of curricula and syllabi but not to the exclusion or detriment of the learners' established practices and perceptions (Wallace, 2002, Council of Europe, 2006). Different behaviour towards a task might be anticipated from children of different backgrounds. These behaviours convey social meaning and should be recognised in terms of how they express voice. A view of language learning as contingent and creative requires greater

flexibility than that offered by L2 acquisition approaches which characterise language as a neutral medium of communication.

When children are aiming to prove their inherent ability, rather than to acquire skills we might expect this to affect their thinking during an activity and, therefore, affect what might be expressed in the learning process. By viewing learning as a fixed and limited commodity, psycholinguistic approaches place a greater emphasis on measuring and judging performance goals relating to the particular focus of the learning task (Dweck *et al.*, 2003). Children who wish to validate or demonstrate proficiency in the performance goals of the activity are likely to be highly concerned with proving their capabilities in a particular aspect of their learning. What children perceive as being valued by the teacher in video conferencing interaction has important implications for learning. For instance, a greater emphasis in class teaching on oral English will marginalise the role of other modes of communication, restricting the ways in which children are able to voice their learning during the task. Moreover, only those children that are confident of success in this mode will risk giving voice to their ideas and risk exposing their capability in public while others will keep their voices to themselves. In contrast when learning is seen as a potential trait that can be developed through the social construction of new knowledge, skills and understandings children are more oriented towards activities that will allow them to master new tasks and expand on their learning more broadly (Oviatt *et al.*, 2003). Sociocultural approaches to learning encourage learners to pursue learning goals. These aims are more open in regard to the outcomes they intend to achieve. An orientation towards the development, rather than the acquisition, of communication skills means that when young learners encounter difficulty they are more likely to meet it with stepped up effort and the exploration of new strategies. The outcome of this activity is contingent and improvised, making it difficult to predict the kind of language and learning opportunities that will arise. Learning in this case is prompted not through but in interaction (Ellis, 2000). An advantage of sociocultural approaches is that the learner can enjoy a task even if they are not doing well at it because the focus is on the development of shared dialogue instead of personal success or failure in attaining a specific communication skill.

These different conceptions of learning foster different goals which in turn promote different motivations and behaviour in children. The motivation to meet agreed performance criteria and demonstrate acquired skills or the motivation to grow are heightened in each case. It can, therefore, be anticipated that the theory underlying the task design (whether learning is seen as fixed and objective as in the case of psycholinguistic approaches, or expansive and constructed as characterised by sociocultural approaches) will have repercussions for children's ability to express themselves.

It makes sense that children will develop and select strategies that best suit their communication goals. If the goal is to show competence in a particular aspect of learning then this suggests different strategies to the goal of applying learning more generally through communication. Different strategies bring different restrictions and opportunities for articulating voice. What is needed is an approach that allows children to benefit from the structure of performance based tasks, while challenging them to explore creative ways of interacting with others. It would appear that the reality of classroom life calls for a balance to be struck between the structure and support provided by psycholinguistic learning tasks and the explorative and collaborative freedom fostered through sociocultural tasks. Robinson and Taylor (2007) use the notion of *thirdness* as a means of theorizing the ways in which L2 speakers find their voice in the face of such dichotomies. The meaning that a speaker makes when expressing their voice is not thought to be located in the speaker but in a third space somewhere between various dualities that affect language learners; between the speaker and the addressee (Bakhtin, 1986), between institutionalised and lived experiences of voice (Gutiérrez, 2008), or between the L1 speaker and the way they present themselves in their L2 for example. The concept of thirdness is not intended to eliminate these differences but to focus on how an interface is achieved between the two poles (Robinson and Taylor, 2007). The symbolic space where these differences come into contact with each other is the third space.

Gutiérrez (2008) and Gutiérrez *et al.*'s (1999) concept of *third space* learning provides a potential environment in which both planned (psycholinguistic) and improvised (sociocultural) opportunities for language development can be incorporated into task design. Third space learning is thought of

as a place where the *official* and *unofficial*, formal and informal spaces of the learning environment intersect (Gutiérrez *et al.*, 1999). In other words the structured pursuit of school imposed language goals is combined with the development of children's own interests from their lived experience. A space is created for learning in which school directed activities can be bolstered by the connections children make between what is done in school and their lives in the world beyond.

This space is comparable to Vygotsky's (1978) notion of how cultural tools can be used to support the acquisition of new skills, knowledge and understandings (see also Cook, 2005). Both Vygotsky and Gutiérrez *et al.*'s concepts embody a belief that learning is directly related to the social development of children. They emphasize the role of interaction with others in the process of making meaningful connections between previous capabilities, new capabilities and the learning process. However, Gutiérrez (2008) expands this idea beyond a space of adult-centred 'scaffolding'. For Gutiérrez it comprises learning and development supported through the movement of practices across various temporal, spatial, and historical dimensions of activity. The teaching and learning roles in this model are flexible, giving way to unscripted dialogue in which there is equality of participation. Children work together as peers, applying their combined skills and knowledge to produce new meanings. The dialogue that results from this combined effort provides them with an opportunity to test and refine their understanding in an ongoing process. Online exchanges further influence what is expressed and how by adding technology to the mediation between bodies, physical environments, institutional and cultural practices. How technology helps to shape the communicative outcomes will be a crucial consideration in this research.

It is anticipated that a task design which encourages children to control their own language development and is set in neither school nor home, but in the third space of the video conferencing environment will help them to draw on their own funds of knowledge. This study will explore the question: *How does the design of the learning task affect voice?* Insights from the data will reflect the extent to which this way of working provides learners with greater opportunities to articulate their voice in relation to the task and each other.

2.4 Collective thinking

In theorising the connection between language and cognition Vygotsky makes the important observation that ‘human learning presupposes a specific social nature’ (1978, p. 88). This finding highlights learning as a social process which is achieved through the joint creation of knowledge in interaction with other people (Mercer, 2000). That learning is achieved in communication is of particular significance for language learners as the medium for learning is also the focus of study (Hauck and Youngs, 2008).

Online spaces, such as the one provided by the video conferencing software Skype, expand the opportunities available for language learners to blend and synthesise home, community and school learning styles in order to make meaning together (Gutiérrez, 2008). For Gutiérrez (2008) traditional conceptions are expanded to include informal and non-formal ways of learning from beyond the classroom. These might include uses of play and imagination more typically found in the home or oral story telling used to communicate ideas in the community, alongside more traditional question and answer procedures used in school. It is suggested that opportunities for young learners to interact in meaningful contexts that build on their lived experiences, home languages and cultural frameworks set conditions in which language learners can flourish as the potential for drawing on different meaning making resources is expanded (Spencer *et al.*, 2011).

Kress (1997) describes how children are already familiar with using a range of semiotic resources when interacting outside of the classroom. Semiotic modes such as gesture, intonation, speech, or artefacts can be used together to help clarify what the speaker is trying to say. If a child is given greater access to a range of semiotic modes they are given the opportunity to support their verbal language with other communicative resources (such as gestures, signs or objects to name but a few). It is argued that these resources are capitalised on when accessed through communication in relevant contexts that allow for multiple modes of representation (Spencer *et al.*, 2011, Kress, 1997, Vincent, 2005). Video conferencing environments allow for the use of wide-ranging resources from different spheres of children’s lives (such as the home, school, the playground and so on) to be brought in to the conversation in purposeful ways. Thus by providing L2 learners with

access to a greater variety of resources with which to express their voice they are better supported to make meaning through interaction with other children.

The activity of engaging with other language learners through telecollaborative projects generally involves different linguistic and cultural communities and so gives rise to the possibility for negotiation of meaning and for exploring different cultural perspectives through natural conversations (O'Dowd and Ware, 2009). This approach to developing children's capacity to use their L2 relies on collaboration between the children through dialogue. The model for learning through online collaborative projects is social, requiring children to talk with each other and think together. The need to look beyond linguistics to understand how children make meaning together has long been acknowledged (Ogden *et al.*, 1946). Skype supports children's online communication by allowing them to draw on a wide range of resources alongside spoken language to express themselves. This environment would appear to provide a particularly rich space in which to support children's thinking together through dialogue.

Skype provides different opportunities for dialogue between children which is fundamental to a sociocultural perspective on the relationship between communication and cognitive development. Encouraging children to talk together through telecollaborative tasks offers an alternative to the ways in which languages have been typically taught in the past. Traditional approaches to learning in the classroom tend to be teacher led and follow a typical IRF structure. According to the work of Sinclair and Coulthard (1975) these lessons have distinct characteristics in terms of the kind of roles that speakers might adopt and the nature of the ensuing interaction. As the manager of classroom discourse the teacher is most likely to hold the locus of control in this pattern of classroom communication. In a classroom situation where there are a large number of potential speakers who wish to take a turn (and from whom the teacher wishes to measure their response) it is easy to see why the short exchanges that this type of interaction produce are widely used (Wegerif *et al.*, 2004). The IRF approach to discourse gives children little opportunity to lead classroom dialogues and engage each other in open conversation. It is, therefore, likely that children will approach Skype communication having had little opportunity to develop the kinds of qualities that allow them to negotiate meaning together in a school-setting. This situation has

prompted Hampel (2006) to observe that learners who are used to 'more hierarchical and instructivist learning contexts need to be encouraged to make the most of the democratic and learner-centred features that are inherent in many online environments' (p. 112). It is likely that the development of a community of children who actively engage their voices in talk to make meaning together will require time and support.

Following their investigation into the use of talk in primary school classrooms between 6 and 7 year old children Wegerif *et al.* (2004) highlight the importance of the particular surroundings in which the communication is embedded. The authors assert that in the primary classroom the style of interaction that is socially appropriate will fall in to one of three broad categories. These are termed *disputational*, *cummulative* and *exploratory* talk (Wegerif *et al.*, 2004). Disputational talk may be described as unproductive disagreement in which ideas are challenged by another speaker without resolution. In contrast, cumulative talk is characterised by one speaker building on the ideas of others without any questioning or discussion of them. Both of these types of engagement reflect joint activity that is considered unproductive in terms of learning. Conversely, Wegerif *et al.* (2004) suggest that the creative ways in which people combine their intellects in order to solve problems leads to thinking together. The principal means for thinking together is through exploratory talk in which children critically engage with each other's ideas in order to reach a mutually accepted understanding. By justifying their ideas through dialogue the children's reasoning is made visible in their talk. In this sense the knowledge that children make together is made publically accountable. The change in thinking that this process of finding agreement entails may be considered learning.

Wegerif *et al.*'s (2004) concept of exploratory talk has been essentially concerned with the content and function of spoken language with a view to investigating how shared knowledge is developed face-to-face in the classroom over time. Children learning a foreign language through telecollaborative activities are positioned slightly differently to Wegerif *et al.*'s model in so far as the talk constructed by the children to negotiate meaning is at the same time the focus of their study. Moreover, children from different cultural communities must be prepared to adapt their talk in response to their partner who might have different styles of expression and different patterns for

learning. These particular features of language learning through telecollaboration place an investigative emphasis on *how* children talk together alongside *what* they talk about (Belz, 2003). The affordances of Skype allow children to use other multimodal resources alongside verbal speech to engage their voices in collective reasoning. Visual cues including gender, age and ethnicity are combined with other paralinguistic meaning carriers such as facial expressions, body language that might indicate confidence, shyness or distrust, and gestures like nodding or hand signals for example that can indicate agreement or discordance, to give voice to a person's attitude towards what is being expressed (Belz, 2003, p. 69). These visual cues provide information that partners in conversation can use to negotiate meaning together.

Bakhtin (1986) points out that contexts of communication are revisited and reinterpreted through words in ways that speakers cannot control. The significance of Bakhtin's claim is that the meaning expressed by a voice cannot be reduced to the speaker's intent or the response of the addressee, but emerges from somewhere between these voices (Wegerif, 2008). Bakhtin's perspective posits that this ambiguity is constitutive of meaning. Collective thinking is seen as the outcome of dialogic creativity rather than individual reasoning. The relational aspect of voice is brought out through this account of learning. For new meaning to emerge there must be interplay between voices. This interaction opens creative spaces for reflection between learners. A key assumption underlying this theory is that the communicative resources used to express a speaker's voice cannot be considered stable or fixed, but open to interpretation by those involved in a conversation. Bakhtin uses the example of how scholars across generations have returned to ancient texts to reinterpret them in order to show how an expression of voice does not have a singular and predetermined meaning (1986, pp. 5&170). The use of digital technologies can provide new and different opportunities for students to express themselves. Establishing voice in this environment depends on the possibilities for action and meaning that come from the collaborative use of these multimodal resources. Bakhtin's dialogic model presupposes that the ways in which information is expressed are always open to different interpretations which arise from the different life experiences of the conversationalists. Communication develops around the understandings of each speaker and through this distance between them new meanings come to light (Bakhtin, 1986, Wegerif, 2008).

A relational view of language is dialogic and fits with the notion that talk grows around a central idea rather than through turn taking in an exchange of information. Learning in the video conferencing environment of this current research can be considered a group endeavour that happens in interaction with the voices of others. It would be useful to determine how children use semiotic resources to construct conversations together in meaningful ways. By monitoring how the children reconfigure semiotic resources in a video conferencing environment this current study will illustrate how different ways of expressing voice through Skype might affect the ways in which children think together. Exploring the possible connection between the multimodal resources available to learners, their interaction in dialogue and their possibilities for action and meaning will answer the research question *What role does voice have in helping children think together?*

The literature relating to the key themes of voice, mediation, learning task and collective thinking has been outlined in the chapter above and related to the research questions posed by this study. To date no other study has brought together these elements to focus on children's use of Skype and their expression of voice in an L2.

3.0 Methodology

The research approach consists of the knowledge claims, the strategy and the method of data collection and analysis (Creswell, 1998). How each of these aspects is used in the project framework shall be explained in turn through the discussion below.

3.1 The knowledge claims

While the research questions are central to the enquiry process Hatch (2002) highlights the need to take a reflective step back in order to identify the starting point. The process of forming these questions involves certain assumptions about what is knowledge, how it can be known, what values go into it, how we can report it and the process for studying it. These claims can be crudely gathered into a broad school of thought, or paradigm (Creswell, 2003). Underlying the questions for this research is an interest in how people experience the world and how this experience shapes their actions. It cannot be assumed that children from widely dispersed communities will formulate the world in similar ways. The focus of this study is on the different ways in which children experience and express voice through online communication in English. Central to the way in which social action is approached in this study is the idea that people *construct* their own perceptions of the social world through their interpretation of it and their actions based on those interpretations. Nevertheless, it is not within the realm of this research to interpret the social surroundings beyond the data.

Constructivists assume a world in which universal realities are unknowable and the objects of investigation are individual constructions of reality (Hammersley, 2002). This must also be applied to the researcher which poses the problem of how any claims to know something can be considered valid if all knowledge is a matter of individual perception. While individual realities are contingent on experientially based, local and specific factors, however, it is acknowledged that elements are often shared across groups and communities (Hatch, 2002). These elements of social phenomena, such as waving to someone, exist as a social action independently of the researcher's claims about their role and significance in a particular situation (Hammersley, 2002). Hammersley, therefore, defines knowledge as 'beliefs about whose validity we are reasonably confident' (2002, p 73). If

the purpose of people's interaction is to reach a shared understanding there must be elements that can be commonly understood for communication to function. It follows that we can be reasonably confident about elements of social interaction based on the assumptions that we make about the world that are taken to be beyond reasonable doubt at any given point in time.

Therefore the emphasis of this present study is not on interpreting the meaning of what is expressed by the children, but rather on understanding *how* meaning making resources are employed in the data to express children's voices. It became apparent during the development of this present study that a concern with what is visible serves a practical purpose. The children's background knowledge and cultural repertoire influences how they choose to express themselves. However, what is known to the children beyond what is referred to in the recorded interaction is unknowable from the perspective of the research. Insights into the children's cultural realities beyond their interaction can only be gained by cultural narratives, artefacts or other referents that occur within the data.

The literature review illustrated how the ideas of Bakhtin (1986) have helped set the question of how voice is experienced and expressed by the children. His work emphasised the socially contingent nature of how voice is expressed in response to the voices of others through dialogue. Wertsch (1991) expanded this social perspective on language to also consider the effect of context on communication. He made links with Vygotsky's (1978) idea that people seek to make sense of the environment in which they act, and that this shapes the resulting action. In the current research I follow Wertsch's perspective that voice is intrinsically connected to its surroundings and cannot be isolated from other voices. This position connects the question of how voice is constructed and expressed by the children to the question of how voice is mediated through the affordances of Skype. From the literature described in the review above it is proposed that children proactively use multimodal resources to construct their voice in response to others during online exchanges. This proposition sets the boundaries of this research.

3.2 The strategy

What is of interest to this research is how voice is expressed through the ‘multimodal ensemble’ that prevails at a particular point in time, to borrow Jewitt’s (2010, p. 17) term for the combining of different modes into a conversation. When investigating *how* children express their voice through a telecommunication application it is unclear where the boundaries are between what is expressed and the context. In a special issue of *Qualitative Research* edited by Dicks *et al.* (2011) the contributors discuss this issue. At the heart of this discussion is the question of whether ‘social context’ is constituted through social interaction or through multimodal expressions of language (including verbal and non-verbal signs), or both (Dicks *et al.*, 2011). These two different perspectives lead to different starting points from which to trace the origin of the meaning making resources that people use in social situations. By taking social interaction as the provenance of tools used for engaging others in communication the authors suggest a broader focus on naturally occurring social action. What is sought is an understanding of how speakers draw on the wider context of social and cultural life to give meaning to the modes they use to communicate with. Conversely, the research strategy adopted by this current research follows the view that social contexts are determined by the multimodal process of expressing language in the here and now. The way a voice is expressed is viewed as contingent on the particular situation in which it is used. This strategy looks specifically at each case of language in use to identify how speakers constantly remake meaning and choose the most appropriate resources to represent what they wish to express (Kress, 2011). Each approach will offer important, but different, insights into the multimodal ensemble that people use to express their voice.

Determining the unit of analysis is therefore important to ensure the contextual conditions relating to the phenomena being studied are covered. This present research seeks to explore how children express their voice during Skype communication. The objective is not to ground the different modes from which meaning is made in the wider context of children’s everyday lives, but rather to analyse in detail how material objects, physical places, spatial features, sounds, body language and other visual phenomena give meaning to the social context of a particular video conferencing encounter. By giving attention to the ‘multiple modes used to make meaning’ as opposed to the

‘multiple modes of social order’ (Atkinson *et al.*, 2008 p. 54) this present research starts from analysis of the semiotic choices made by children to communicate their voice. This approach implies very detailed data collection in order to grasp the context fully. At a more applied level a strategy of inquiry that is useful for this purpose is a small-sample, in-depth study. In seeking to ensure that voice is well explored and that the essence of its construction is revealed the adopted strategy shares many of the features commonly associated with case study research (Yin, 2002). A focus on answering ‘how’ questions, an interest in the contextual conditions because they are relevant to the study and a need to delimit the unit to be studied in order to look at it in depth are all aspects identified by Yin (2002, Yin and Davis, 2007) to justify a case study approach. Stake’s description of an intrinsic case study as being undertaken because ‘first and last, one wants better understanding of this particular case’ (2006, p. 445) would also seem to dovetail with the intention of this present research.

However, implicit in a scientific understanding of case analysis is the idea that a particular case is similar, or different enough from other known instances to allow for comparisons to be drawn between them. Any one particular case serves to reinforce or stand out from others in a theoretically decisive way (Tight, 2010). At present there are no other examples of research into how children experience and express voice through video conferencing technology, making this a single case study. No comparisons can, as yet, be drawn. The issue of bounding the case is essentially a matter of research design and sampling strategy and not necessarily solely the procedure of a case study strategy. So a definition of the strategy adopted in this instance as a small-sample, in-depth study would seem the most appropriate one.

What is investigated in detail in this study is a contextualised contemporary communicative event between eight children bounded by the screen capture and the time span of the data segment. The unit of analysis is, therefore, delineated by time and place (Creswell, 2003). Data have been collected from the online collaboration of primary students using the communication tool, Skype. A group of children aged between 6 and 7 years were selected from each of the two schools. The children were members of two classrooms from two different countries who volunteered to participate in a series of conversations together using Skype. One school is an infant school located

in England and has a cohort of L2 English speakers who have Urdu or Punjabi as their L1. The other school is an international school in Portugal whose students are also L2 speakers of English and speak Portuguese L1. This small-scale exploratory study aims to answer questions concerning the nature of interaction between the children within the context of a regular lunch time extra-curricular school activity. A qualitative approach is an appropriate one for these particular features (Goodman *et al.*, 2002).

3.3 The role of the researcher and ethical considerations

As my role included acting both as researcher and class teacher such proximity to the action under scrutiny raises particular issues.

Hellawell (2006) defines an *insider* as someone possessing a priori intimate knowledge of the community and its members. The benefits of insight that this might lead to are counterbalanced by the advantages of being an *outsider*, which gives the researcher scope to stand back and abstract material from the research experience. An awareness of where the researcher is located between these two positions informs the reflexive strategy applied to the process of data collection and analysis (Hellawell, 2006). During the research I had the dual role of teacher and researcher for some of the participants. I therefore had an existing relationship with some of the children. The knowledge that I was acting under both roles is likely to have influenced the behaviour of those being studied and my own ability to be effective in each position. Moreover, the level of researcher involvement in the setting studied creates issues of intrusiveness (Hatch, 2002). Conducting research within my own organisation together with another primary school (with which I am able to have a degree of empathy as a teacher) placed me as a participant observer (Hellawell, 2006). In this role the researcher would have a more obvious impact on the social setting and on naturally occurring activity. It was therefore important to consider how my participation influenced the way events transpired in the setting. This measure pertains to Article 3 of the United Nations Convention on the Rights of the Child which states that in all actions concerning children the interests of the child are the primary consideration (British Educational Research Association, 2004).

Hatch (2002, p. 74) discusses how shifting roles during the research process can be a deliberate and strategic way of benefitting from the useful qualities of both empathy and estrangement in the research context. The Skype sessions between the children at the start of the programme required a considerable amount of teacher involvement. Unfamiliarity with the new learning community, the computer and the video conferencing environment meant that the children sought help from a familiar source (their teacher) to conduct online communication. As the online activities progressed it was hoped that the students' confidence would grow as they became familiar with the affordances of the working environment and each other. Through careful task design the aim was for them to take on a more independent role allowing the position of the teacher/researcher to shift to a more passive observer role. A greater degree of teacher modelling and scaffolding the communication was necessary in the beginning to build rapport between the students from the two schools and develop their confidence working with a new medium in an unfamiliar context. However, a consecutive run of sessions is needed for the children to properly develop these capacities. The period from September to December 2012 was fraught with various obstacles including a change of role for one staff member who became acting headteacher, a burst water pipe, altered half-term holiday dates and staff absence, all of which affected the flow of sessions. As a result the children had less opportunity to develop their confidence in the video conferencing environment. I was, therefore, never able to gather data about the phenomena being studied without some direct interference in those phenomena because the children required a degree of support during their conversations.

The activities used for data collection were an extracurricular option for the students which were an extension of the common practice for both schools. In this sense the children were not being asked to do anything that was outside of their normal behaviour (Sykes, 2011). This reduced the ethical dilemma concerning the impact the research might have on the children's education. In addition the students were assured that not choosing to take part, or withdrawal from the activities would not affect their continuing every-day school life and routines.

Following Article 12 of the ethical guidelines for educational research (British Educational Research Association, 2004), which requires that children are granted the right to express their

views in all matters affecting them, an attempt was made to explain the research situation and seek direct collaboration in the process from them. However, the children participating in this study were aged between 6 and 7 years which made informed consent a particularly difficult area (Sykes, 2011). Care had to be taken not to exploit the weakness of children who are not in a position to refuse. Before the activities began the children were involved in discussion as to the aims of the project. Discussion gave greater scope for shared understanding to be reached concerning the key points behind the project, the research and its relation to the students. Following this discussion the children were given a consent form that dealt simply with the matters talked about and which invited them to formally give their consent (Appendix 1a). The intention was to provide the children with sufficient understanding to make a reasonable judgement as to whether or not they wanted to participate in the project.

All of the consent forms used in the present research were first developed for use in the pilot study. As this study had the same format as the main study the documents remained the same with just the dates and days being different. The main study letter to the headteacher and class teacher also made reference to the pilot study in the introduction. Because of their almost identical content and format only the main study letters are included in Appendix 1.

It was difficult to determine if the document given to the children (Appendix 1a) was evidence of their informed consent, or their desire to see something that resembled a worksheet completed. Both teachers stressed to the children that this was a voluntary lunch-time activity. The teachers waited in their respective classrooms and no attempt was made to collect any children from the playground when it was time for the sessions to begin. The decision was left to the children if they wished to remain outside playing with their friends or return to the classroom to engage in the Skype session. By the second week all of the children had opted to go back to the classroom rather than remain in the playground. Only at this point was it possible to say that the children were fully aware of the nature of the activity and had chosen to take part freely.

Understanding the nature and consequences of their participation in the research was also an issue for parents and carers. Informed consent in terms of a contract between the researcher and parents

or carers of the researched via a consent form was sought from this group at the beginning of the new academic year, two weeks before the research began (Appendix 1b). The consent form explained the academic and the research aims of the project. The form also detailed the management of issues relating to data protection.

To control access to the data the recorded material would only be viewed by educators and teaching staff for the purpose of teacher training and research. This precaution was stated in the consent form. I also emphasised that the confidentiality and anonymity of the participating students, practitioners and schools would be maintained in published material through the use of pseudonyms and the storage of data on a password protected computer hard drive. In maintaining the participants' right to privacy it has also been necessary to blur the facial images in those photographs where the children could have been recognised (Article 25, British Educational Research Association, 2004). Finally I clearly stated that participants did not have to be included in the research if they did not want to and would be able to benefit from participation in the project if they wished to do so. Written consent was also sought from the head teachers of both schools prior to undertaking research and they were kept informed of progress (see Appendix 1c).

There remained problems surrounding the notion that consent had been freely given simply by being operationalised in the form of a document (Hammersley, 2007). The issue of parents who share parental responsibility but do not live together also needed to be carefully negotiated. Furthermore this project involved students who speak English at school but other languages in the home. There was no guarantee that written correspondence in English provides the necessary information in a form that those who act in guardianship can understand. In one case correspondence was translated into the L1 of the parents to provide greater clarity. In an attempt to resolve these issues the parents were also invited to attend a meeting in which the aims of the project, the purpose of the research and the implications for the participating students were reiterated. The parents were given an opportunity to ask questions throughout this meeting. In the United Kingdom family members from all children attended the meeting, in Portugal five of the twelve children were represented by family members.

3.4 The method of data collection and analysis

3.4.1 The pilot study

To approach the task of modelling the semantic patterns and their relationships it was necessary to conduct a pilot study. This initial investigation shed light on the challenges to be met when answering all four research questions in this study:

- 1) *How is voice experienced and expressed in a video conferencing environment?*
- 2) *What effect do the affordances of Skype have on how voice is expressed?*
- 3) *How does the design of the learning task affect voice?*
- 4) *What role does voice have in helping children think together?*

In the autumn of 2011 a series of 7 Skype sessions were conducted between the two schools with a different cohort of 6 to 7-year-old children (see Appendix 2 for an outline of the sessions' activities). These preliminary sessions played an important role in determining the approach to the main study. For example, the intention had been to allow the children to converse freely using the technology. However, after a series of long and persistent silences it became apparent that the interaction would require a degree of adult support to begin with. This led to the structure of the sessions in the main study which is outlined in Appendix 3. The pilot, therefore, provided an opportunity to trial how the conversations could be structured, test the equipment that the schools had available and assess the feasibility of conducting these conversations with young children in half hourly slots.

This small-scale test also served as a rehearsal for the main study with regard to the method of data collection and analysis. It was possible to view the preliminary recordings of children talking together and try out analytic categories to see how useful they might be in answering the research questions. These early viewings of the pilot data confirmed the overall analytic framework that was later used in the main study as well as highlighting potential themes that could be subsequently explored. The organisation and transcription of recorded conversations is outlined in the section below. The approach is discussed as it relates to the organisation and transcription of recorded conversations from the main study. However, the method used in the pilot study was applied in the

same way to the main data to facilitate a clear comparison between them. After the analysis and identification of patterns of children's multimodal expression of voice from the main data, the data from the pilot study were returned to once again to see if there were any corresponding patterns. The following discussion will, therefore, outline the framework used to analyse the main study.

3.4.2 The main study: data collection

The principal study has consisted of seven sessions, each lasting 30 minutes which ran during Monday lunchtimes between 24th September and 3rd December 2012. A 30-minute limit on the time available for each session was a practical constraint imposed by the need for all members of the group to first have their lunch during the hour-long break in their lessons. England and Portugal share the same international time zone so each school has their school day framed in much the same way at the same time, thus avoiding the difficulty of scheduling meetings when countries are located in different time zones (Mullen *et al.*, 2009). The ability to run the sessions as a lunch-time activity for both classes also made gaining simultaneous access to computer resources more feasible. Another factor influencing running this programme as an extracurricular activity was that it limited the extent to which the research impinged on the provision of daily teaching. The decision to restrict the data to a small sample is essentially a practical one as it would not be feasible in the scope of this present study to include children's experience of English outside of the time they spent talking to each other through Skype.

Each of the 30-minute sessions were broadly directed by instructed tasks with simple and informal learning objectives (see Appendix 3). An example would be for the students to share a hobby or interest or an aspect of their school work with their Skype partners. To begin with the children's interaction was supported by substantial teacher involvement to scaffold their online communication. As Mullen *et al.* (2009) observe, to be suddenly engaged in real time conversation with a stranger can be understandably awkward. Without the support of the teacher to help guide the children it was found that their initial conversations would often be limited. Typically a closed question would be followed by a short answer, a long pause would then signal the end of the exchange. Care, therefore, had to be taken by the teachers in the way the online exchanges were set up in order to encourage the children to engage in the kind of talk that promotes discussion and

also, according to Wegerif *et al.* (2004), learning. The role of leading the Skype session alternated: one week the children in England would plan an activity or game to try with their Skype partners in Portugal, and during the following session the children from Portugal would lead the session. In this way all students had the opportunity to take on different roles over a series of conversations.

Each classroom had only one computer which had to be shared by the twelve members of each group. While it was very difficult to stick exactly to set timings and the number of people involved might vary, a single Skype session could be very crudely divided into six conversational events distributed over a 30-minute corpus of data which delimits the Skype session. This meant that if the children were partnered one-to-one then not all of the children would have the chance to engage during a session. As a result the students talked in groups, the size of which was determined by the activity they were doing. Each classroom computer was connected to an interactive whiteboard. This meant that a group of children interacting through Skype could be watched by the other children in the class. The children who were watching their colleagues were encouraged to reflect on what made the communication successful or unsuccessful. This ongoing peer assessment helped the students to establish some informal conversational ground rules for talking through Skype. These rules included the need to talk and move slowly, the need to ask the person you are speaking with to repeat themselves if you did not understand them, the value of using tail questions to prompt discussion (such as 'don't you think?') and the value of having an object as a memory prompt when talking about something familiar. During the sessions the children sat at the classroom computer either individually or in groups depending on the task and the confidence of the particular child. Some students were simply more comfortable with a friend sat beside them.

It would, therefore, be misleading to claim that during the events under scrutiny the children captured on screen were the only participants whose presence influences the interaction. The other children in the group from each school and the two class teachers also bore witness to exchanges and participated at times. This is visible in the recorded data through laughter, clapping, gestures or other semiotic means.

An advantage of using Skype is that the interaction can be recorded as it takes place, capturing the ways in which speakers orchestrate different semiotic resources to express their voice in the moment. A recording facility is now built into the platform. However, at the time the present study was conducted this facility had not yet been added. Nevertheless, Skype proved a useful tool for the researcher as a software application on the computer as it is possible to integrate its functionality with other programmes. A range of programmes are available that record Skype conversations including Pamela for Skype that allows the video call to be captured and stored digitally. This study made use of Pamela call recorder (version 4.8) which provided a very rich data set from the two participating classes.

3.4.3 A broad description of the micro segment of data

While evidence from across the data set is used to inform the analysis, a 9'21" extract (micro segment) of a 27'31" Skype session (macro segment) from the main study is analysed in depth. The micro segment occurs at the end of the Skype session. This particular session is different to the others as the Portuguese children chose the theme of the conversation instead of the teachers. The children felt that the previous encounter (in which they were able to play some classroom games with their Skype partners) had led to productive interaction. They hoped to maintain this by creating games around the theme of Christmas. Small groups of 2, 3 or 4 Portuguese children carried out activities with their English partners. While the activities were child-led they borrowed structures for talk that they were familiar with from the classroom. What is interesting is how these classroom structures give way to more spontaneous communication from the children as the session developed. The micro section is the final activity and marks the beginning of the turn for the particular group of children in the data.

The communication in the micro segment is between the following pupils (for a full list of the students that appear in the data see Appendix 4):

From Portugal

Anna (a 7-year-old Portuguese girl who speaks Portuguese L1)

Beatriz (a 6-year-old Portuguese girl who speaks Portuguese L1)

From England

Claire (a 6-year-old English girl who speaks Urdu L1)

David (a 6-year-old English boy who speaks Urdu L1)

Ethan (a 6-year-old English boy who speaks Urdu L1)

Fiona (a 7-year-old English girl who speaks Urdu L1)

Gary (a 6-year-old English boy who speaks Urdu L1)

Heidi (a 7-year-old English girl who speaks Urdu L1)

This passage was selected in part because it occurred at the end of the series of Skype sessions and represents exchanges between the students with the least researcher and teacher involvement. The data excerpt was considered the most likely to yield relevant information in answer to the research questions. In this sense it represents a critical case sample (Cohen and Crabtree, 2006). It shows a social event (documenting the ways in which voice is manifested through dialogue and its use in helping students to think together), computer-mediated communication (inviting scrutiny of the ways in which different semiotic systems intertwine to make meaning), and a task (prompting an analysis of the ways in which voice helps to sustain communicative activity). These dimensions shape the analysis of the data extract.

As a social event this passage stands out because it represents the children's attempts to transgress beyond the school stipulated activity of a quiz and connect with each other on a different topic from an out of school interest. What makes this interesting is the way in which the turn taking between speakers changes in dynamic from structured classroom practice to informal exchanges drawing on the role of the audiences of children and teachers in the two classrooms, in a seemingly opportunistic way. Evidence of the dialogic way in which voice is constructed could be anticipated from these exchanges.

The students from Portugal had been set the task of creating a quiz for the English students. The class chose the theme for the quiz by voting (the chosen theme was Christmas). As a group they

thought of key vocabulary around this subject (e.g. Mary, star, Christmas tree). The teacher then discussed question words and question forms with the students and modelled how these could be applied to the chosen subject of the quiz through familiar games from the classroom (such as anagrams, guess the hidden Christmas object). As the language to be used by the children (the question forms) was controlled by the teacher this aspect of the task fits with psycholinguistic approaches to language learning. However, the children worked in pairs and were free to choose the games and resources used to create a particular challenge in the quiz. The class also discussed items from home that they thought might be helpful. Each pair had to introduce and carry out their challenge with their Skype partners. This required reaching a shared understanding on the part of the students in order to explain and conduct the activities, a semiotic phenomenon of particular interest to this study as it challenges the children to convey their respective voices in a clear way for a real purpose.

In all Skype sessions the students were given the freedom to bring items from home, include any aspect of the classroom environment in their conversation, adjust their seating position in front of the computer, move the webcam or microphone and use the functionalities of the Skype conferencing system (emoticons, messaging and video chat) and their related affordances. As this research is particularly interested in identifying the different elements used to make meaning, it is useful to know what choices the children made between different semiotic modes (words, images, sound, movement or objects) to constitute their voice in this environment. The micro segment chosen for in-depth analysis is considered a dense multimodal text through the creative way in which the interlocutors engage resources, including each other, the webcam and microphone, a teddy bear, gesture and the teachers in expressing their voice.

3.4.4 The method of approaching data analysis

Creswell's (1998) data analysis spiral (Figure 1) illustrates the researcher's numerous, repeating and non-linear paths through the data. It provides a helpful framework for managing and analysing the information collected. In this study, data collected from Skype exchanges provided the entry point into the spiral. It was followed by the first loop during which data were transcribed to safeguard them, assist retrieval and prepare them for analysis. In this initial phase the transcription

took the form of a low magnification of the data intended to give a broad overview of categories that could be found in the data. A more detailed description of how this was done will be given in the following section.

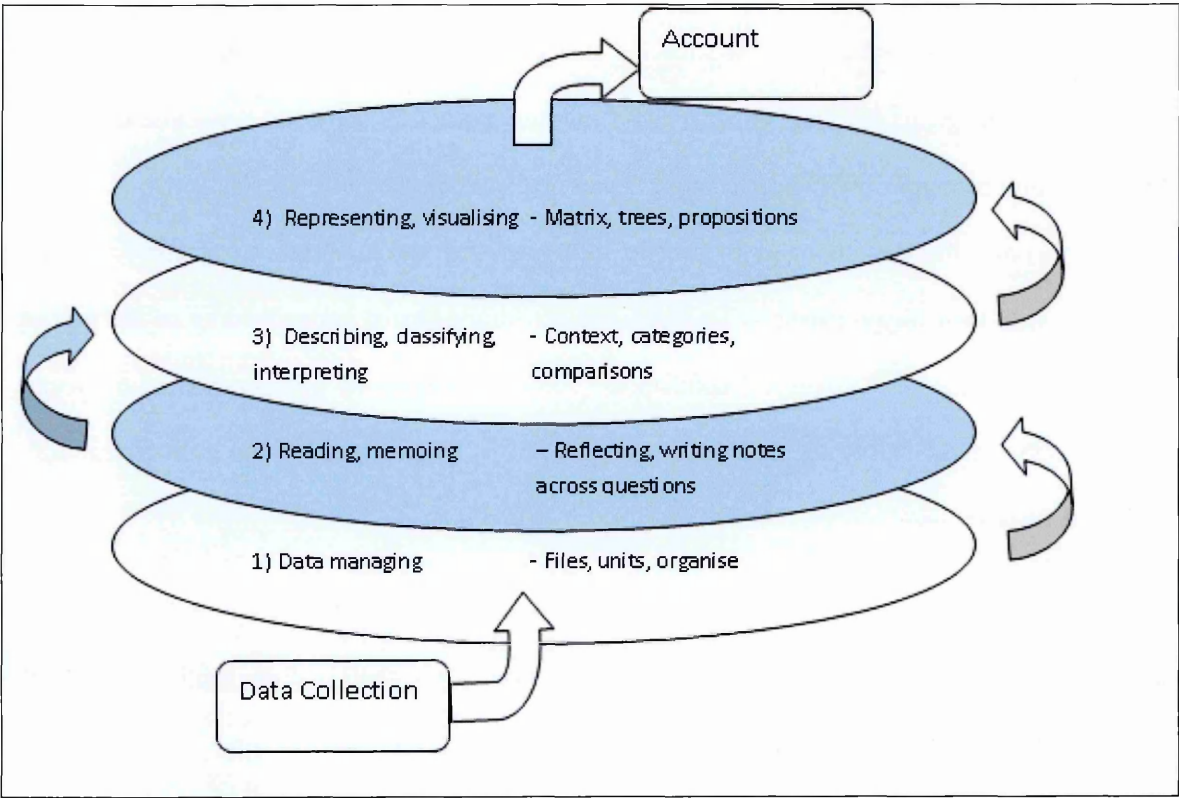


Figure 1 The data analysis spiral (Creswell, 1998)

The next stage of data analysis is termed by Creswell (1998) as reading and memoing. This provides an initial open viewing of the data as a prelude to more structured analysis. It is important to note at this stage that any ‘open viewing’ of the data in the early stages of this study was guided by the research questions, and was not completely ‘open.’ An interest in modelling how semantic patterns are orchestrated by children to express their voice shaped the way in which the data set was approached.

Video capture of data is attractive for the micro analysis of online exchanges based on the notion that the research setting is directly knowable through what we can see (Plowman and Stephen, 2008). Video lends itself to repeated viewings of an event and would appear to represent the complexities of multimodal dialogue. However, the process of looking is also informed by some preconceptions of what the research is interested in looking for. These ideas might be modified as

the analysis unfolds but the data must be selected and translated into another medium by the researcher to enable its interrogation (Plowman and Stephen, 2008). Reconstruction of the data may be done through a variety of methods and interpretive devices (including transcription), all of which, by reducing reality, give meaning to the chosen events (Jordan and Henderson, 1995). An additional web of meanings is, therefore, assigned to events by selecting them to represent the context in which they unfolded. The choices the researcher makes in representing the data will ultimately influence its interpretation. In recognition of this Wolfe and Flewitt (2010) highlight the underlying need for the development of robust frameworks for the analysis and representation of events when using visual media for data collection and analysis. They argue that while questionnaire and interview data can offer broad insights into practices around technologies, case study video data reveals the multimodal detail involved in computer-mediated interaction (Wolfe and Flewitt, 2010). The suggestion is that multimodality may be intricately interwoven and overlapping as various semiotic resources are orchestrated alongside each other to construct an interlocutor's voice. Studying a particular semiotic system such as language or gesture may thus provide a different interpretation if looked at separately than when looked at in action together. Baldry and Thibault (2006) similarly point out that different resource selections relate to and affect each other within the composite whole of the multimodal text (pp. 18-19). These meaning systems function together to create a *multiplying effect* (Lemke cited in Baldry and Thibault, 2006, p. 18) on the meaning made from the text in ways that are not predictable through discrete analysis of the individual modes. Each mode cannot, therefore, be studied on its own without referring back to the whole multimodal text.

Attempts to take into account the complexity of multimodal communication demonstrate the variety of ways through which communication is understood and analysed. Plowman and Stephen (2008) consider how different ways of representing video data affects the perception of multimodal interaction. Ciekanski and Thierry (2008) take a macro scale analysis of online collaboration between language learners. They use a mixture of quantitative and qualitative methods to generate a coding scheme intended to examine the learner's choices of different meaning making resources. While the coding scheme used proved productive it was difficult to classify all the systems that

might contribute to meaning in a multimodal exchange. For example, systems such as colour, size or light are difficult to classify in coded form (O'Halloran, 2008). O'Halloran (2008) concludes that the challenge to model the orchestration of system choices across semiotic resources has still to be met in a satisfactory way.

The following section will describe the analytical framework used in the present study and give a rationale for the way in which data have been organised into categories and how they were transcribed and analysed.

3.4.5 Analytical framework

In order to understand how children are able to express their voice through the use of video conferencing software in the L2 classroom it is important to employ analytic descriptors that capture the diverse ways in which they can communicate in this environment. Dicks *et al.* (2011) concede that the tendency to fragment how people communicate into separate methodologies such as *visual* or *multimodal* approaches is not sufficiently rigorous or systematic to account for the complexity of how meaning is made in the material reality of everyday life. The authors suggest that social semiotic approaches explore more fully how material objects, spatial features, places, audio and visual phenomena give meaning to an exchange. The central concern of this current research is on how these multiple modes are used to make meaning.

For the purposes of this research voice is defined materially as the multimodal choices that people make to try to communicate something to others. It is important to acknowledge that this view not only relates to the behavioural, paralinguistic, linguistic and material ways in which a voice is expressed but also the 'in place' meaning that communicates something to others through social activity in a particular physical context. An interest in children's expression of voice and how this is achieved through the physical context in which it is situated falls outside the purview of approaches that treat language purely as a formal and logical system. The functional linguistic framework of Halliday (2003) has been widely employed to investigate how people communicate (see Butt *et al.*, 2003). This framework explores how language functions as a resource across the many and constantly changing contexts of human interaction. Halliday suggests that language is

able to do this by providing speakers with choices based on cultural conventions that are recognised by the members of a conversation. The functional linguistic approach could give valuable insight to this current project as to how a speaker's lexical choices result in the discernible patterns of meaning which Bakhtin (1986) termed speech genres. It would give a particular focus on whether there are any emerging patterns of verbal speech that are specific to communication using Skype. However, in the context of this study, voice is defined materially as being constituted from multiple modes of which verbal language is just a part. These modes take on particular roles in different contexts at any one point in time. A framework in which an abstracted perspective on language defines the structures for understanding all forms of communication would not do justice to the 'in place' meanings expressed by children on Skype. An interest in the ways in which video conferencing technology enables different communication resources to be configured, shared and recycled suggests a multimodal approach to understanding how children articulate their voices.

At first glance multimodal data appear overwhelmingly complex. For the data in this study to be manageable, it is necessary to take an approach that allowed the researcher to begin to organise it according to some pre-determined analytic descriptors. This process of 'disaggregating the whole phenomenon under study' (Hatch, 2002, p. 152) is termed *typological* analysis. The typological groupings (or categories) used to broadly organise the data were suggested by the research questions. The questions used in this present study make the situated analysis of how voice is expressed and experienced a sharp focus. Looking at the key areas in which people express themselves in the material world provided the starting point for the initial groupings of data. What was required, therefore, was a broad systemic scheme of multimodal analysis that locates not only the words that are spoken in conversation, but the speakers as they stand or sit speaking, the ways in which they organise themselves as conversational partners, the layout of the rooms in which the speakers sit and the placement of signs and objects within those rooms as they are represented to each other through video conferencing technology.

Jewitt (2009, p. 28) describes three broad approaches within multimodality. Multimodal interactional analysis stands apart from other approaches to multimodal data through its emphasis on the notion of context and situated interaction, which places the focus of analysis on what

individuals express and react to in given situations. This interaction is seen as co-constructed between members of a conversation (Scollon and Scollon, 2003, Jewitt, 2009, Norris, 2011). Other approaches can be loosely grouped under the two perspectives of multimodal discourse analysis and social semiotic approaches to analysis (Jewitt, 2009). These perspectives draw more heavily on Halliday’s theories of systemic functional grammar and focus more on theorizing semiotic resources, their functionality and meaning potential. Both multimodal discourse and social semiotic approaches would provide a different analytical route through the data to that of multimodal interactional analysis, which is less suited to the types of questions being asked in this present study.

Figure 2 shows how alternative approaches to data representation might affect the analysis. Multimodal interactional analysis results in the kind of transcription shown in Figure 2a. It is a matrix showing the simultaneity of language, gaze, movement and actions through their horizontal positioning. The transcription incorporates the temporal sequence of a Skype conversation in the leftmost column. Time, therefore, becomes the principle around which all other information is organised. Following a similar framework to Baldry and Thibault (2006) Figure 2a also has screen shots inserted into the left hand column, representing the continual visual sequence as a series of sampled still images. The transcription favours a visual representation of the data by placing it on the left-hand side, reflecting an emphasis of multimodal interactional analysis on the communicators and their physical surroundings in the moment of interaction (Baldry and Thibault, 2006). Baldry and Thibault (2006, p. 30) assert that the *a priori* way in which western readers approach a text is to first look from left to right and top to bottom. As a result the layout of a matrix can create the impression of prioritising information located on the uppermost and left hand sides.

Figure 2b uses the same data as Figure 2a, however, it is represented differently to suit the theoretical emphasis of a social semiotic approach. Social semiotic approaches focus on the meaning making system (such as speech, gaze or gesture) and how it is used, with an emphasis on the different ways in which different ways of communicating conform to, or break from, normative rules of usage (Jewitt, 2009). Figure 2b uses vertical sequencing to represent conversational turns. In this case the social participants are fore-grounded on the left hand side of the table and the




different ways in which modal resources are used are mapped alongside them for the given social occasion. The mode used for transcription is written language which favours the verbal element of the communication. Other, non-verbal aspects of children's voices (e.g. gaze) are represented as symbols employed alongside spoken words as units which help the speaker to build meaning.

The different emphasis that each table places on the data indicates that before selecting a means of representing how children are able to express their voice in this environment it is necessary to reflect on the theoretical goals underpinning the research. Any choice regarding the analytical approach to the data will inflect what can be understood from it. The choices made in this current research were pragmatic ones based on the particular points being represented. An issue with Figure 2a is the way in which time is used as an 'anchor' for multimodal information. Attributing modes to a particular time requires arbitrarily deciding that the information begins and ends at a certain point. The screen shots in the second column represent a snapshot of salient events in the data that are most likely to be a part of more enduring activity in the visual sequence of film. Deciding that the opening sequence in Figure 2a is the word 'hello,' rather than Ethan's action of leaning in to the camera is, therefore, a matter of the researcher's interpretation. However, the horizontal layout of the matrix together with a visual representation of the data enables the reader to judge for themselves the social presence or absence of the children in the conversation in a way that Figure 2b does not allow. A problem with Figure 2b is the way in which it represents communication as decontextualised activity. The emphasis of social semiotic approaches on the communicator's use of different communicative modes in the moment places the focus on social interaction between easily identifiable participants. The children appear in this transcription to be conversing in a virtual vacuum with little attention to the material world (Jones, 2004). The interest of this study is on how children express and experience voice through Skype in the classroom. This focus calls attention not only to the primary involvement of the children (their interaction on screen), but also to their potential secondary involvements (with other class members, objects or audio phenomena for example) from the off screen and on screen surroundings in which their communication is embedded. Multimodal interactional analysis adopts a polyfocal perspective on analysis and the method of representation used in Figure 2a. A useful framework for this purpose is

Scollon and Scollon's (2003) concept of *geosemiotics* (See Appendix 5 for an overview of the geosemiotic coding tree).

2a Multimodal interactional transcription of speech, gaze and body movement

For a detailed description of the transcription conventions see Appendix 6

Time	Screen Shot	Anna	Beatriz	Claire	David	Ethan	Fiona	Gary	Heidi
17:35		<p>hello, my name is Anna and I'm going to ask some questions for you</p> <p>Dominant attention: delivering quiz, subordinate attention on T, gaze vector off screen. So side involvement – not properly engaged demand: requires some form of interaction – first move in opening up interaction space in the social world: intimate personal distance: 95 (represented)</p>	<p>Platform event- though all potentially participate (not a watch) seating directed by T to fit people in as participants, others try to fit the frame too, vying for a place</p>						
			<p>Formally organized seating, uniform angle of body, hands low and on laps, eye gaze angled to right (screen) or to left T</p>						
			<p>Main attention on screen action, a 'watch' with A and B, posture looks attentive, head up</p>						
17:40								<p>Main attention on T, gaze vector on her, T, models response</p>	
17:44		<p>gaze vector of A and B down at question sheet, main involvement with the quiz and what to say next, civil inattention signalled to S, field children</p>	<p>thank you Anna</p> <p>Grining head in to fit screen and engage</p>	<p>thank you Anna</p> <p>exaggerated voice intonation – wishes to catch attention (engage A) away from crowd while</p>	<p>thank you Anna</p> <p>CD and E all lean forward</p>	<p>thank you Anna</p>	<p>thank you Anna</p>	<p>thank you Anna</p>	

2b Social semiotic transcript of speech, gaze and body movement

Pupil	Activity
Anna	# hello, my name is Anna and I'm going to ask some questions for you ((leans towards camera to represent intimate personal distance))()
Beatriz	## ()
Teacher	thank you ((off screen))
Claire	### thank you Anna ((craning head in to screen shot, leans forward))
David	## thank you Anna ((leans forward))
Ethan	## thank you Anna ((leans forward))
Fiona	## thank you Anna
Gary	## thank you Anna
Heidi	## thank you Anna


In this transcription the conventions are as follows: () represents a pause of up to 0'2", (()) indicates a comment by the transcriber, # indicates gaze off screen, ## indicates gaze towards partners' (camera), ### indicates gaze towards represented image of self, Bold lettering indicates a change in intonation,  indicates activity at the same time

Figure 2. Different approaches towards transcribing the data

Due to the problematic issues surrounding the representation of data outlined above, selecting the categories that are going to be used to frame the analysis is a key step in the process (Hatch, 2002).

An interest in how voice is experienced and expressed has a logical starting point in looking at the ways in which people form social arrangements and produce social interactions among themselves. This broad topic is termed *the interaction order* in the geosemiotical approach to communication (Scollon and Scollon, 2003). The term was first coined by Goffman (1981) to describe the different ways of being together or alone in the material world. Of particular interest to this present study is the notion of *singles* (a person who is alone in a social space among others), *withs* (two or more people who are seen to be together through their mutual focus of attention on each other) and *platform events* (a person performs for others who watch) (Scollon and Scollon, 2003, pp. 61-2). A major organising system in this category is the words that are spoken to each other by the children. Though Goffman cautions that ‘no talk, however intimate, informal, dyadic, “purely conversational,” or whatever, precludes non-linguistic responses or the inducing of such responses’ and he goes on to say ‘it might be argued that children learn to respond with actions before they respond with words’ (1981 p. 40). In the present research the primary focus in this group is, therefore, on all forms of embodied communication and not just the language.

A second category is termed *visual semiotics* (Scollon and Scollon, 2003). This group focuses on how meanings are produced through visual artefacts such as pictures, photographs, film, objects, writing and any other form of sign that refers to something other than itself and exists independently of the interlocutors’ bodies. The focus of this current research is on how visual objects mean what they mean because of where they are used, and the way they are used to communicate things to others in the world.

The third category comprising geosemiotical systems is called *place semiotics*. The broad array of meaning systems which fall into this group are those not located in the persons of the communicators or framed in artefacts. This order examines the significance of the place in which the conversational event occurs and how space is used within it by the conversationalists to give meaning to the semiotic resources they employ.

These three categories do not exist independently of each other in social action. How these different resources, located in the three different categories, express meaning together in the

material world is termed their indexicality (Scollon and Scollon, 2003). The indexicality of different semiotic resources will vary in meaning depending on the context to which they are connected or indexed. For example, pointing a finger can mean giving directions, an accusation, a threat or a dance move depending on the way in which this resource integrates with resources from the other categories. In this approach highlighting how semiotic resources are indexed in the material world is the key to identifying how different resource selections relate to and affect each other within the composite whole of the multimodal text. Multimodal forms of communication must be related to each other in the video conferencing environment to discover how children voice their ideas.

Once this initial set of analytic categories had been identified the data were viewed completely several times with each of the three groups in mind. The purpose was to find and mark those places in the data where the most salient evidence of each category could be found. At this point the level of interpretation was limited to the question of whether the information related to the category. The colour green was used in a table to code those sections that relate to the data in which each of the broad areas would appear to feature prominently. (For a more detailed description of how the transcription of the data is coded see the discussion below and Figure 4.) Coloured portions of data could then be returned to later for closer examination. It was imperative that when separating the data the whole of the data remained intact because elements would at times relate to more than one category.

To try to limit the degree of interpretive bias from disaggregating the data according to preconceived categories I asked a colleague to carry out the same task independently of my viewing the data. This analysis was done using the 27'31" data excerpt that appeared on an initial viewing to be particularly rich in information relating to the research questions. By comparing the distribution of colours in the tables and looking for patterns of similarity we were able to get a more accurate idea of how semiotic resources were being used in the data. This initial coding of the data was used to evaluate the extent to which the two observers held a shared understanding of the coded behaviour. This form of triangulation put myself as the researcher in a stronger position before moving on alone to the subsequent interpretive phase. It helped me to delineate key

incidents in the data and also to assess my own reading of the data for bias, exaggeration or misrepresentation.

During this initial stage of description, classifying and interpreting both my colleague and I began to process the data marked as being related to each category. The objective was to identify key moments in the data so that they could be more easily processed. Because of the need to develop consistency in analysis and annotation it was necessary to divide the three categories into sub-categories based on Scollon and Scollon's (2003) geosemiotics framework. Thus, the 27'31" macro excerpt of the data chosen for more detailed analysis was annotated according to each of the nine sub-categories discussed below. However, it was very difficult for each observer to attribute exactly the same timing for each observed sub-category. For instance, while it was possible for both observers to identify a child's use of interpersonal distance to help voice their ideas it is likely that there will be some slight disagreement over the exact start and end times in which this resource came in to play in a conversation. This makes drawing comparisons particularly challenging. In order to standardise the charts from both observers the charts were split into thirty seven 45' sections. Each of the nine sub-categories can be potentially represented in one of the thirty seven sections. This gives a total of $n = 333$ areas of potential correlation or disagreement. Each chart was then compared section by section to identify areas of similarity and difference in the ways that each observer interpreted the data. The findings from this breakdown of the charts showed 114 instances of agreement between them and 54 instances of disagreement. The total of these instances is $n = 168$ which gives a 68% rate of correlation between the findings of the two observers. This rating would suggest a reasonable amount of correspondence. However, an absence of agreement or disagreement in the charts meant that both observers interpreted the data as not representing an instance of a particular sub-category. By not marking a sub-category both charts also show alignment in their reading of the data. When these instances are added to the equation the rating becomes 279 (instances of agreement between the charts) / 333 (the total number of instances in the data) = 92%. This rating would suggest a strong degree of correlation between the readings of the data from the two observers. By using the same analytical lens (the sub-categories discussed in the section below) on the data we were able to identify and cross check patterns of multimodal

resource use. From a practical point of view this standardised approach also made it much faster to add annotations and manage the complexity of the data. Nevertheless, when reducing data in this way it is important to maintain a data trail that enables data to be accurately attributed to its source. This helps readers of research reports to determine the reliability of the analysis and subsequent conclusions (Merriam, 1998). To this end the same table overlay was worked on (see Table 1 below) and augmented with notes, leaving the original data set intact.

How the three broad categories based on Goffman (1981) and Scollon and Scollon's (2003) classification were sub-divided for further analysis is outlined below. Possible challenges of applying these to the online context are also discussed.

3.4.5.1 The interaction order

The category addressing the relationship between the embodied actions of the speakers (the interaction order) was further divided into four sub-categories. Each of these sub-categories represents the main resources for making meaning in the interaction order. The first is *the sense of time*. A person's sense of how quickly or slowly time is passing is attributed to either the urgency with which they want something done which makes time seem to pass more slowly or the extent to which they focus on a task (monofocal or polyfocal activity) (Scollon and Scollon, 2003, p. 50). Signs of impatience such as tapping or repeatedly glancing at a clock are examples of how someone's sense of time manifests itself through their embodied actions. Our postures and movements index our state of mind and can be read by others in the social context. Each Skype session lasted for only 30 minutes and so the children were allowed a relatively short amount of time for their task. Moreover the activities occurred at lunch time, a time in which the children are usually free to choose what they do. It is likely that how this time is perceived to be passing will have some effect on how and what is expressed by the children.

The second sub-category accounts for the ways in which *space* can be perceived and invoked through embodied action (Scollon and Scollon, 2003, p. 52). Squinting or shading the eyes with a hand can invoke a sense of visual space, holding the nose and exclaiming 'it smells in here' communicates a sense of olfactory space, fingers in ears gives a sense of auditory space, shivering

can indicate thermal space and reaching out can express tactile space. Different actions index different perceptual spaces. It is to these different semiotic zones that we look for the interpretation of their meaning. Video conferencing technology creates a sense of proximity even though the users of the technology might be separated by vast distances. The space that is represented to each speaker is limited by what the webcam is able to capture and transmit.

Interpersonal distance is the sub-category which refers to the space that separates people in a social place (Scollon and Scollon, 2003, p. 54). Intimate distance indicates touching to very close proximity. Personal distance is the distance in which we feel obliged to begin some kind of social interaction to either acknowledge or ignore the person in this space. Social distance suggests a space in which the presence of others is acknowledged without needing interpersonal engagement, for example the distance between the teacher and a student at the back of the classroom. These different spaces between people index their different relationships with one another. The ways and places in which we sit, stand, turn or look in relation to others expresses something of our interpersonal relationships.

Goffman (1959) distinguished between different units of interaction that relate to the ways in which distance brings us together or excludes us from social encounters. Of particular importance to the current research are *singles* which are described as ‘a person who is by himself or herself in a social space among others’ (Scollon and Scollon, 2003, p. 61), *withs*, which are identified as ‘a party of more than one whose members are perceived to be “together”’ (Scollon and Scollon, 2003, p. 60) and *platform events* which are defined as ‘someone or a small group [that] performs as a spectacle for others to watch’ (Scollon and Scollon, 2003, p. 62).

The personal front is the fourth aspect of embodiment that constitutes the interaction order. As Scollon and Scollon (2003, p. 57) define it, the personal front is virtually any visible or perceptible aspect of a person that gives meaning to others in a social situation. For the purposes of categorisation in this present study the definition of the personal front follows Goffman’s model:

[O]ne may take the term “personal front” to refer to the other items of expressive equipment, the items that we most intimately identify with the performer himself and that we naturally

expect will follow the performer wherever he goes. As part of the personal front we may include: insignia of office or rank; clothing; sex, age and racial characteristics; size and looks; posture; speech patterns; facial expressions; bodily gestures and the like (Goffman, 1959, p. 34)

However, for the purposes of the present research this model has been narrowed down to what children do, or do not, bring to focal attention through dialogue. This narrowed focus was necessary to make sense of the data. An account of every perceptible aspect of the people involved in Skype interaction becomes so complex that it almost defies analysis. Studying the most salient aspects of the personal front used in conversation was a more productive way of answering the research questions. A speaker will infuse their voice with signs that dramatically highlight and portray aspects about themselves that might otherwise remain hidden. For if the speaker's voice is to be meaningful to others they must select those features that will best communicate what they wish to say. Goffman's (1981) concept of 'civil inattention' shows how we are able to make sense of the busy and complex array of discourses present in everyday environments such as a classroom through prioritising certain resources (like the teacher's speech) over others (peer talk, classroom signs and so on). The more streamlined focus taken by this present study on what children (often) silently agree not to pay attention to avoids unnecessary overlap in the conceptual framework when processing the data.

3.4.5.2 Visual semiotics

The broad typology that examines how the interaction order is represented through 'disembodied' resources such as images and signs is visual semiotics. This category is complex when applied to video conferencing data as the social action is represented digitally on a screen and, as such, is itself a visual artefact. This means that an embodied act such as standing up might indicate a desire to point out something in the room in the interaction order, but the represented image of a body without a head indicates to the conversation partner that they are excluded from the exchange in the visual order. To express voice online the children need to be aware that the embodied messages they give through the interaction order are received visually as visual semiotics and may give a

different meaning to the intended one. The broad category of visual semiotics is further divided into three sub-categories to describe the data (Scollon and Scollon, 2003).

Modality is based on the linguistic idea of modals which modify statements to give them a greater degree of truth or credibility (Scollon and Scollon, 2003, p. 89). With respect to visual semiotics modality is the degree of authenticity that can be attributed to an image or sign. The extent to which an image has been modified beyond what is conventionally considered a naturalistic state provides information about the discourse that might take place. An example might be the oversized lettering and primary colours of a child's writing on a whiteboard that indexes a different context of use for the word than if it were printed in the page of a book.

Where action, objects, signs and images are located within a text, this affects the meaning that they express. *Location* as a category identifies two basic information structures, centred and polarised (Scollon and Scollon, 2003, p. 92). Information that is located in the centre of a frame (such as a poster, leaflet, information page and so on) is given more attention than that located on the periphery. Analysis of these structures can be further divided into top, bottom, left and right. These divisions are important because the way in which we read a framed image can reflect the way in which we read information on a page (Leeuwen, 2008). The placement of a sign in the top left of the screen would indicate given or existing information, whereas the bottom and right hand portions of the screen indicate something new. These information structures were originally devised by Kress and van Leeuwen to investigate how advertisements convey meaning to people. It will be important to observe how they interact and are changed when represented on a computer screen during children's conversations through Skype.

The final sub-category used in this current study as part of the visual order is termed *text, image and/or object participants*. Here the term *participant* is used 'to mean a construction element used in a picture' (Scollon and Scollon, 2003, p. 86). This category was again devised with the fabricated images used for advertising in mind. It is concerned with the relationships between text, images and/or objects as semiotic resources and the speaker as they are represented through the screen. This relationship is further extended, however, to include the relationship that these

represented semiotic resources have with the person viewing the image (the addressee). In the literature review it is suggested that the expression of voice is an inherently social process incorporating elements of addressivity and responsivity in relation to speakers communicating with each other (Bakhtin, 1986). The manipulation of objects within the frame of the computer screen not only expresses conceptual relationships between the interlocutor and the object, these objects participate in constructing relationships of meaning with those viewing the screen. In other words, the object in Figure 3 (a handheld whiteboard with a sum on it), expresses meaning in a conversation in aggregate with the interlocutor, the signs in the classroom display behind the children, the clothes that the children are wearing, the embodied actions of the other children framed in the screenshot and also the person viewing the image. There is always a dynamic dialogicality in play among signs that this category attends to. Of particular interest in the analysis are the ways in which objects, signs and images become the main or subordinate clause in online discourses.

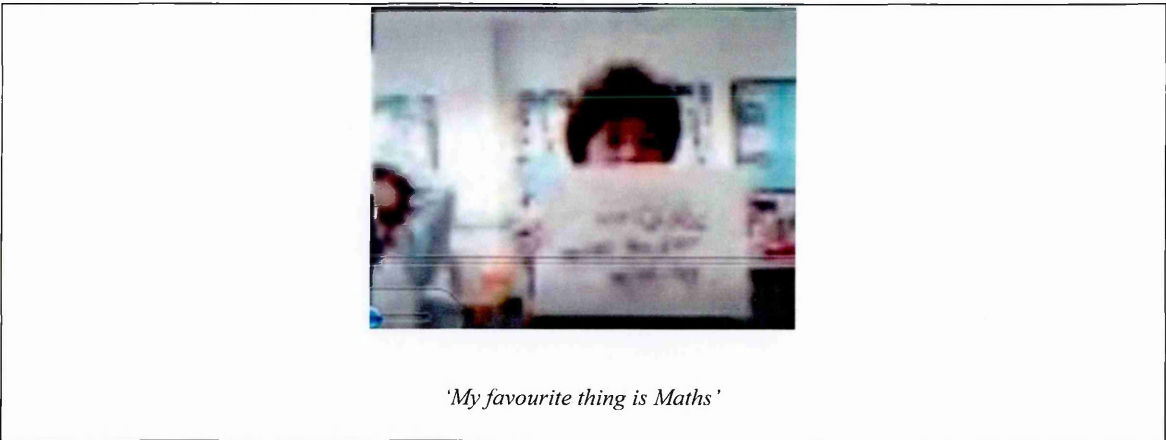


Figure 3. Student holding up a whiteboard

3.4.5.3 Place semiotics

Geosemiotics makes reference to the real, physical world in which everyday life is carried out. To ground the way in which children express voice we must look to the material world itself (Scollon and Scollon, 2003, p. 110). *Place semiotics*, the third broad typology, turns our focus away from the actions and activities of the interactants to investigate the places in which voice is expressed.

The concept of *physical space* considers whether a location is expected to have semiotic systems, and if so, the kinds of discourses that these meaning making resources might be put to. The

example of the room in Figure 3 shows a display of high frequency English words behind the children. The absence of curtains or blinds suggests that this room is only used in the day time. There are also images on the walls in strong primary colours. These material features of the environment help to index the space as a children's classroom in which the use of English vocabulary is important. These signs are situated because they reflect the physical environment in which they are placed. One might expect children to voice ideas about learning in this space.

Another important aspect of the location in which communication happens is the way in which they are organised to reflect the interaction order. How the material world intersects with the different ways of being together socially is accounted for by the sub-category *social context*. Scollon and Scollon (2003, p. 169) suggest a continuum in the design of public spaces between highly designed and controlled spaces that clearly define the limited social interactions that might occur (such as a courtroom) and loosely designed or controlled places (such as a park) that are open to a variety of ways of social organisation and discourse. One might imagine that the space within the classroom walls, the type of furniture and how it is laid out will affect the social use of the room and shape what is expressed there.

Because the classroom represents a particular social space, a study of how children communicate in such places must also consider where the socially constructed public/private line is drawn, and how this distinction is produced. Goffman (1959) described how a speaker's demeanour changes depending on the kind of social performance they are expected to give in particular places. Goffman used an analogy with the theatre to tell between 'frontstage' public areas where the speaker will behave differently to 'backstage' private ones. Identifying how these different areas are established through the children's communication online and how the children manage transitions between them will be important to understanding the role played by the technology in how children are able to express themselves in this context.

3.4.6 Application of the geosemiotic framework

Through analysis of the interaction order, visual semiotics and place semiotics the geosemiotic scheme outlined by Scollon and Scollon (2003) will help to account for the complexities of

expressing voice in a video conferencing environment. However, any framework requires careful application as a tool kit for analysis, as it may presume relationships within the data that do not fit with the particular context of this study. Geosemiotic frameworks have mostly been applied to the study of prefabricated instances of communication such as street signs, advertisements or films. In this analysis of children's communication through telecollaboration meaning is constructed through purposeful interaction which can be serendipitous. In the current analysis greater emphasis is placed on the interaction order and in particular by the children's display of personal fronts to express their voice. These aspects of the semiotic scheme are flexible and dynamic in Skype communication and reflect how children deal with the responsive nature of voice. The children's activity through the interaction order might be in keeping with or contrasting to visual and place semiotics.

In order to identify the relationships between the different semiotic systems described above the data was first recorded and analysed from a very broad perspective. Table 1 shows a relatively low magnification of the data. These transcriptions relate to the initial data management in phases 1 and 2 of Creswell's data management spiral (see Figure 1 above). A key function of this type of transcription is to capture a broad picture of the categories running through the video data. This requires a *macro-analytical* approach to reconstructing the data 'which attempts to capture the meaning making processes of complete texts in terms of the links between the various sub units that make up a text' (Baldry and Thibault, 2006, p. 166), using the categories of *the interaction order*, *place semiotics* and *visual semiotics*, which make up the geosemiotic framework (Scollon and Scollon, 2003). Thus, in the coding chart (Figure 4) the transcription focuses on reconstructing the ways in which social action (the event) is anchored to the world through these three broad geosemiotic systems. It takes into account the relationships that exist between the main semiotic systems which in turn guides a more detailed analysis of the data by looking at subsystems within each category during stage 2 of Creswell's model for analysis.

The representation of the video data would be very crude if the analysis was to go no further than the fairly flat model provided by Figure 4. Each semiotic mode works in a different way to contribute meaning to a voice depending on the media through which the mode is expressed (Baldry and Thibault, 2006). From a macro view of the data it is easy to underestimate the significance of a particular mode as it becomes part of the integrated whole of social activity.

To see the different modes as they appear in the data requires a selective form of multimodal transcription (Baldry and Thibault, 2006). For example, Figure 2 shows excerpts from the same timeframe of data transcribed and analysed using the chosen semiotic framework. This stage in the process of transcription and analysis relates to the third phase in Creswell’s diagram (Figure 2, see also Appendix 6 for an outline of the codes used in the transcription). Each table is divided into columns, with *time* being the foremost column. The time sequence, therefore, provides a reference point that allows each table to be compared with another. The next column provides a screen shot of the visual information at certain points within the time frame. Unfortunately every frame from the video data could not be shown so the image represents what is happening within a time period. The subsequent columns are headed with the anonymised names for the children in the exchange. Those highlighted in blue (Anna and Beatriz) are from Portugal and those in pink (Claire, David, Ethan, Fiona, Gary and Heidi) are from England.

Each table focuses on a particular subcategory (the examples in Tables 2 to 9 show verbal, interpersonal, time, place and modal meanings for the same timeframe of data respectively). The black written text in each column beneath the children is the verbal transcription. This text remained on all the tables as it is an important mode of communication and also provided a helpful reference point to relate one table to another and also relate each table back to the original video data. The coloured text (blue, red and green) shows the researcher’s observations of a particular category. In Table 5 the subcategory of place semiotics is annotated in different colours to distinguish aspects of the visual system that relate to the built environment (the red text) and those aspects that relate to the wider context of time and space (the green text). In Table 6 a similar approach is taken to distinguish aspects of colour and illumination (the red text) and how they are located in the visual system (the green text). (See also Appendix 6.) These micro-transcriptions of

the data are designed to carefully reconstruct the ways in which each mode of communication is interwoven with the constantly changing visual image over time. By teasing out the role played by each mode it is then possible to understand the relationships between them and, thus, to determine how they are organised through the expression of children’s voices in the data.

Table 2. Excerpt from the transcription and analysis of spoken language (timeframe 17:35 – 17:55)






Time	Screen Shot	Anna	Beatriz	Claire	David	Ethan	Fiona	Gary	Heidi
17:35		hello, my name is [redacted] and I'm going to ask some questions for you							
17:40									
17:44				thank you [redacted]	thank you [redacted]	thank you [redacted]	thank you [redacted]	thank you [redacted]	thank you [redacted]
17:50		you're welcome. can you name two of Santa's reindeers?							
17:55					(Rudolph)				

Table 3. Excerpt from the transcription and analysis of interpersonal distance (timeframe 17:35 – 17:55)





Time	Screen Shot	Anna	Beatriz	Claire	David	Ethan	Fiona	Gary	Heidi
17:35		hello, my name is [redacted] and I'm going to ask some questions for you attention on T – sat. back, social distance, lecturer/audience	social distance – gaze vector signals social presence	social distance – gaze on screen	social distance – gaze on screen	social distance – gaze on screen	social distance – gaze on screen	social distance – gaze on screen	social distance – gaze on screen
17:40				gaze on teacher when she responds then back to screen	gaze on teacher when she responds then back to screen – gaining permission to speak?				
17:44		looks to B acknowledge connection. 'with'	looks to A 'with'	thank you [redacted]	thank you [redacted] Leans in to speak – interpersonal engagement	thank you [redacted] Leans in to speak – interpersonal engagement	thank you [redacted]	thank you [redacted]	thank you [redacted]
17:50		you're welcome. can you name two of Santa's reindeers? focus on prop – question sheet. Then look to screen	Both A and B lean and gaze directly at screen						

Table 4. Excerpt from the transcription and analysis of the sense of time (timeframe 17:35 – 17:55)



Time	Screen Shot	Anna	Beatriz	Claire	David	Ethan	Fiona	Gary	Heidi
17:35		hello, my name is [redacted] and I'm going to ask some questions for you							
17:40									
17:44		gaze vector of A and B down at quiz sheet, main involvement with the quiz and what to say next, civil inattention signalled to S, field children – sense of urgency focus on Qu.		thank you [redacted]	thank you [redacted]	thank you [redacted]	thank you [redacted]	thank you [redacted]	thank you [redacted]
17:50		you're welcome. can you name two of Santa's reindeers?							
17:55					(Rudolph) calls out quickly, urgency, establishes competitive element				

Table 5. Excerpt from the transcription and analysis of place semiotics (timeframe 17:35 – 17:55)











Time	Screen Shot	Anna	Beatriz	Claire	David	Ethan	Fiona	Gary	Heidi
17:35		hello, my name is [redacted] and I'm going to ask some questions for you							
17:40		Bright illumination, other children sat on small chairs periodically visible, noise from other users of the class, furniture – chairs moving, pencils falling suggests special use of space – classroom. Expectation of educational activities and school sanctioned behaviours established.							
17:44			thank you [redacted]	thank you [redacted]	thank you [redacted]	thank you [redacted]	thank you [redacted]	thank you [redacted]	thank you [redacted]
17:50		you're welcome. can you name two of Santa's reindeers? Emplacement in time: the quiz has a Christmas theme – December							
17:55		Closer to cam – social distance establishes role as questioner – situated behaviour, in keeping with represented environment.			(Rudolph) [redacted] behaviour – shouting out. Establishes competitive 'game' ethos				

Table 6. Excerpt from the transcription and analysis of modality (timeframe 17:35 – 17:55)

Time	Screen Shot	Anna	Beatriz	Claire	David	Ethan	Fiona	Gary	Heidi
17:35		hello, my name is [redacted] and I'm going to ask some questions							
17:40		Modality – strong primary colours of primary school – colours are mixed together to create contrasts – eye catching, larger than life images that call attention: conventionalised through displays and uniform for those in primary school sociocultural circles. Unnatural colours set the classroom environment as being different 'in school' rather than an out of school 'home' context. 90 – low modality – lack of curtains and blinds in clip classroom suggest daytime use only. High illumination of both classrooms (5 field strip lighting ascended at midday) indicate workspace, place where high level of illumination is needed for the activity that takes place there.							
17:44		Main speaker positioned off centre to left in given or established location	thank you [redacted]	thank you [redacted]	thank you [redacted]	thank you [redacted]	thank you [redacted]	thank you [redacted]	thank you [redacted]
17:50		you're welcome. can you name two of Santa's reindeers?							
17:55					(Rudolph)				

The last phase of data analysis is representing and visualising the data. At this point it was appropriate to revisit the main corpus of data and review the analysis in relation to the bigger picture of the recorded data. Table 7 is an example of how this body of data was reviewed and

entextualised. Each of the 14 recorded Skype sessions from both the pilot and main study were re-examined. The lens used for this study was the themes that emerged from the geosemiotic categories during micro analysis of the data.

Table 7. An excerpt from the global transcription

NA	Coding of data – 23/10/2013									
Session	Time and event	Interaction order			Visual semiotics			Place semiotics		
		Inter-personal distance	front/back stage	presence/absence	modality	signs and objects	gesture	the classroom	third space	exophoric links
19 th Oct 2012	00:11 C S closes space to avoid false start – establish self as first speaker									
	00:43 C Ss crowd in to image to greet Ss by waving. S Ss audible backstage in unison									
	01:46 S Ss follow greeting by saying 'boa tarde' (Portuguese)- link back to last session									
	03:05 C S holds up paper to signal intention to move on to activity. Closes distance									
	04:31 C and S ss use of microphone to control turn taking. Fixed seating positions									
	04:57 S s teaches the C ss a phrase in Urdu									
	05:10 C Ss struggle with words – close distance, social engagement – look around the class to peers to see if they are correct. Ss assumes end of conversation and moves to leave, then has to return for follow up question from C Ss.									
	07:15 Cs hides face with paper, social absence									

Taking a broad view of the data helped to check the reliability of the themes that came to light in relation to the research questions and ensure that the criteria generated for data sampling still related to this wider view. Repeated incidents of key themes in the data gave an indication that there are trends in the way children use multimodal resources to express their voice through Skype. These incidents were subject to further micro-transcription to investigate how closely they relate to the themes first discovered in the analysis of the social event delimited by the initial short time span of data. An example is Figure 30, which is the micro-transcription for the exophoric link identified at 04:57 in Table 7. The following chapter will describe the patterns of multimodal resource use that emerged through analysis of the data and that illustrates how the children express their voices.

4.0 Findings

Examples from the recorded Skype communication between the eight children (Anna, Beatriz, Claire, David, Ethan, Fiona, Gary and Heidi) will now be drawn on to illustrate the multimodal ways in which the children express their voice. The key themes will be teased out of the 9'21" extract of data (micro segment) from a 27'31" Skype session and then described as they relate to a macro view of the body of data collected from the project. The three broad geosemiotic categories discussed above (interaction order, visual semiotics and place semiotics) structure this chapter, describing how language and other semiotic means are used by the children to address and respond to the voices of others.

4.1 The interaction order

The ways in which a person's body performs during social encounters communicates something about the way in which that person is together with others; they might, for example, assume postures, make gestures and sounds or remain still. Scollon and Scollon (2003) follow the work of Goffman (2009) to define this aspect of how we communicate with others as the interaction order. Verbal language will inevitably position the speaker in some way of being with others (as a friend, an interrogator or an observer for example). At the same time the utterance will locate the speaker in a particular place and time. To get the meaning of what someone wishes to say through the verbal use of demonstrative pronouns (this, that, those and these), personal pronouns (e.g. I, he, she, they, you, it) tense and time adverbials (e.g. now, then) it is necessary to consider all the semiotic resources that make up the interaction order alongside verbal speech. When a speaker's words are combined with other elements of nonverbal communication, such as eye gaze, gesture and intonation a clearer understanding of their social or psychological position can be obtained (Scollon and Scollon, 2003, pp. 31-41). The interest in section 4.1 is on the ways in which children's verbal and nonverbal language work together to express their voice in Skype mediated communication. Repeated viewings of the video data from the perspective of each of the four sub-categories of semiotic resources that comprise the interaction order (interpersonal distances, personal front, perceptual spaces and the sense of time) enable the identification of salient patterns of resource use (Scollon and Scollon, 2003, p. 47). This perspective places the focus on how and

when embodied actions and language are brought in to play to articulate children's voices. The four sub-categories of the interaction order investigated in this current research which have been identified and researched by Scollon and Scollon (2003, p. 46) are discussed as they relate to the data below.

4.1.1 Interpersonal distance

Webcam-based communication is distinctive because of the nature of the place in which it happens. Figure 4 shows two screen shots from the 9'21" micro segment of the fourth Skype session, which provides the main focus for this study. The two groups of children are at the beginning of their conversation together. At the time of the screen shot the conversation has been running for 1'12". The Portuguese children (Anna and Beatriz) are asking questions to the English children (Claire, David, Ethan, Fiona, Gary and Heidi) as part of a Christmas quiz that they had created for them beforehand. The spaces in which the students are conversing are separated by the geographical distance between two different classrooms in two different buildings located in different countries. However, in this project the distance represented through the screen by the webcam for the students in Portugal would place the students from England at a distance of 4 to 12 feet (Figure 4a). In face-to-face communication this distance would equate to what Scollon and Scollon call *social* distance (2003, p. 54). Social distance allows us to acknowledge the social presence of others without engaging them interpersonally. It is the kind of distance maintained between a teacher and their pupils in a classroom. The distance represented by the webcam for the children in England would place the Portuguese children at a *personal* distance (18 inches to 4 feet from the respondent). In a face-to-face encounter, at this distance a person would be within what we sense to be our personal space so we feel obliged to engage them in some kind of social interaction (Scollon and Scollon, 2003, p. 54) (Figure 4b).

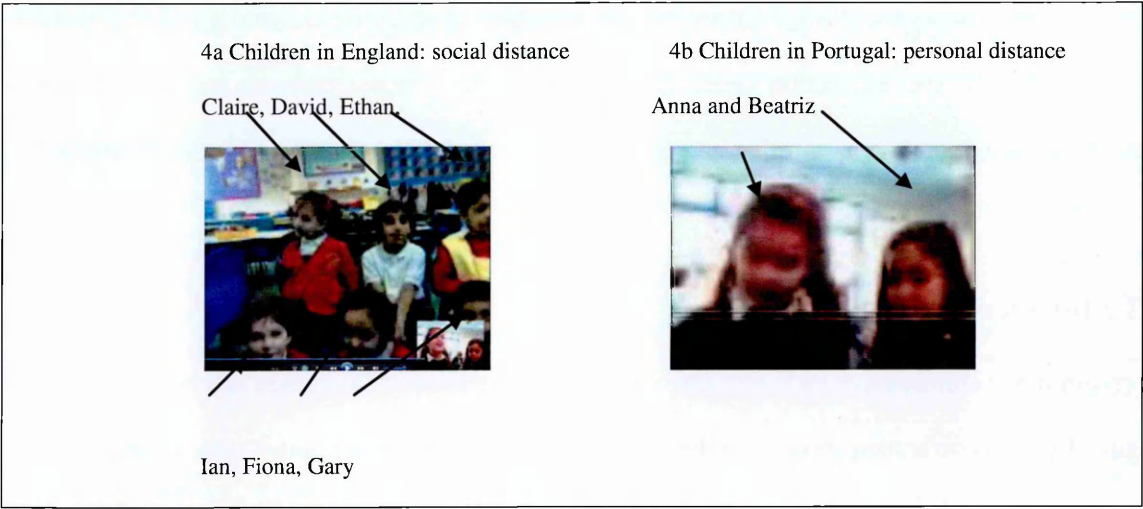


Figure 4. Interpersonal distances represented through the webcam

In a face-to-face conversation the participants’ experience of interpersonal distance would be the same as each other’s. In a webcam mediated communication this is not necessarily the case as the space perceived by an interlocutor depends on the distance their conversational partner is from their webcam. This means that a speaker can affect the degree of social space that is represented to their partner, but they are unable to directly influence the distance at which their partner appears before them. Different interpersonal distances demand different types of behaviour from the people that experience them. If the experience of interpersonal distance is very different for the two groups of students then their ability to act as individuals with mediational means must also be different (Wertsch, 1991, p. 12). Not only are the children positioned differently physically speaking, but also socially as they have different access to culturally acknowledged tools (such as a prepared question sheet, or a microphone) to express their voice (Bakhtin, 1986). This can be appreciated in the data from the roles assumed by the students in the exchange. Both Anna and Beatriz are in a position to engage their listeners directly while the six English children in Figure 4a are members of a group and subject to the dynamics of group interaction. From the outset of the data Anna (who appears at the closest proximity to the screen) establishes her role as the questioner and main speaker while Claire, David, Ethan, Ian, Heidi and Gary (sat in orderly rows at a social distance from Anna and Beatriz) fall naturally into the role of respondents. The ways in which interpersonal distances are mediated through the webcam can be seen to directly affect the way in which voice is expressed in this environment.

The represented interpersonal distance between the students is altered 3 minutes and 17 seconds later in the data. At this point Anna finishes the conversation and moves out of view from the capture of the webcam into the *backstage* area of the Portuguese classroom. She then reappears on the screen (*frontstage*) from the unseen backstage area of the classroom at a *public* distance of 12 to 25 feet only to disappear 4 seconds later (Figure 5a-c). The represented change in the interpersonal distance indexes a sudden change in the social and interpersonal relationships between the children which allows for different types of discourse to potentially enter into the exchange. From this distance Anna cannot engage verbally with the children, instead her posture must be ‘read’ by Claire, David, Ethan, Fiona, Gary and Heidi. By appearing at a distance Anna is afforded a greater degree of movement. She is visible dipping her head in towards the screen and running purposefully off screen to the right. The effect of this activity is to engage the children’s attention back on the screen in anticipation of what might come next. Anna then introduces a Teddy bear into the screen shot at social distance from the children (Figure 5d). If social distance provides the opportunity for interpersonal engagement without the obligation to necessarily do so, the bear might be considered an offer of further social interaction (Figure 5d). The ways in which social distance is framed and represented by the computer thus becomes a semiotic tool, a part of the orchestration of meaning making resources used by Anna to express what she wishes to bring into the conversation.

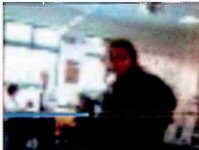


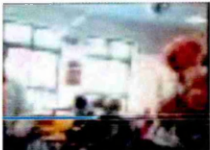
5a	5b	5c	5d
Anna appears at public distance	dips towards the camera	then exits the screen	Anna’s teddy bear enters the screen
Time: minutes,seconds			
20:07	20:08	20:09	20:16
			

Figure 5. Screen shots of Anna

The excited whispering of the children, both onscreen and off, establishes the bear as a topic of conversation. At this point both Anna and her bear move close to the webcam, conveying an

intimate distance. This distance displays an intention to converse on a more personal level adding a greater degree of intimacy to the expression of Anna's voice.

The different ways in which children manipulate interpersonal distance is a recurrent theme throughout the data collected for the current investigation. The space in which the students converse synchronously can be a conversation between two children, a publicly performed event before two classroom communities, or a space where the children converse separately amongst themselves within their own classrooms before engaging with one or several children in the other group directly through Skype. Interpersonal distance provides an important resource enabling children to alter the style of talk (i.e. from an IRF genre to cumulative or exploratory talk) and change their conversational roles. For instance, Anna began the exchange in Figure 4 by presenting herself at a personal distance to her Skype partners in England. This position suited her role in the school given task of conducting a quiz. At this point Anna is not only presenting herself, she is also communicating for a scene of wider scope as a representative of the Portuguese class and the school. On the basis of this initial projection of Anna the English children begin to fall in with this way of interacting and build up lines of responsive action as the respondents in the quiz. Anna is, therefore, committed to her role in leading the question and answer activity and follows the IRF pattern of dialogue (see Sinclair and Coulthard, 1975). As the interaction among the children progresses Anna wishes to switch from the fixed and more formal roles of the quiz to an informal conversation about her teddy bear. In order to modify the roles and express something different Anna first alters the interpersonal distance at which she appears to the English children, preparing them to respond to her in a different way. This is done by her leaving the screen and then appearing at a public distance from the English children. Anna is then able to bring her teddy bear into the screen shot and into the conversation in a way that does not conflict with the previous "question and answer" genre of talk (see Figure 5). By varying the forms of participation in the conversation the children not only take account of the underlying academic themes of the activity but extend the boundaries by sharing their interests (such as teddy bears).

The change in role as in the case of Anna from questioner to conversationalist can be seen elsewhere in the data. Figure 6 shows some of the different ways in which children affect the way

their interpersonal distance is represented to others as they shift roles and allow each other's voices to participate in the conversation in different ways. The children are able to voice their support for other's interests by sitting back, or share interests of their own by bringing themselves to the foreground (Figure 6a-c). They are able to collaborate with each other in the classroom from a personal distance while presenting a social distance through the webcam to their partners (Figure 6d-f). An ability to simultaneously manage interaction from a personal and social distance allows children who are not confident in English to benefit from the personal support of a classmate to voice their ideas while maintaining a sense of group collaboration in the negotiation of meaning through Skype (see Wegerif *et al.*, 2004). By stepping back from the webcam the children could collectively express themselves to their Skype partners as a performance (to greet each other or perform a song for example) (Figure 6 g and h). The various ways in which the children are able to participate in the Skype interaction creates richer opportunities for them to express their voices and helps to bring them together through exploratory talk. Skype affords children the flexibility to manipulate the interpersonal distances between them and if their teacher is willing to relinquish some control provides them with the autonomy and informality to use interpersonal distance as a resource in creative ways to support how they express themselves in their target language.



Figure 6. Children represented at different distances from their Skype partner and in different groups

Such a shift in the locus of control concerning how the children are able to express themselves in relation to the task and each other is visible from an overview of the data. Figures 7 to 9 and Tables 8 and 9 illustrate the degree of teacher involvement that can be seen in the data. Figure 7 shows a screen shot and the verbal transcription from the first Skype session of the pilot study. The screen shot shows the visible presence of both teachers in front of the webcam at a social distance from their Skype interlocutors. They are facing the camera which would indicate that they are socially open to online communication. The verbal transcription demonstrates their involvement in managing the flow of conversation which, in these early conversations is quite heavy. In Table 8 they establish that the dialogue will follow a ‘question and answer’ genre, they decide who will take on each role and how the children should begin. Section 3.2 described the way in which I managed my role as a participant observer. The section explained how the children looked for a high degree of support to conduct early online conversations as they lacked the confidence to interact with unfamiliar people in an unfamiliar environment. As the project progressed the children began to establish connections with each other and became used to the ways in which they could voice their ideas when using Skype. Figure 8 is a screen shot and verbal transcription from the last recorded Skype session of the main study. At this point it is possible to see that the teachers are no longer frontstage participants and have shifted roles to that of observers backstage. The presence of both teachers in the periphery of the classroom, out of sight of the webcam meant that

the children in each classroom could always look to their teacher for support if they needed it. As a result neither teacher was ever completely removed from the context. Nevertheless, both are visibly absent from the screen and, therefore, socially unavailable to the children on Skype. While the teachers helped to decide the nature of the activity (a Christmas quiz), it is now the role of the children to determine the ways in which they interact during the quiz (Table 9). The children opted to use the visible prop of whiteboards to play a word jumble game. This approach required more open discussion between the children as they tried to reach an understanding as to how the game is played. The visible absence of the teachers would seem to afford the children a greater degree of freedom over how they express their voice. In Figure 9 Olive leaves the fixed seating position of her chair and closes the interpersonal distance in order to make the letters in her hand the most salient meaning making resource for her Skype partners during the game.

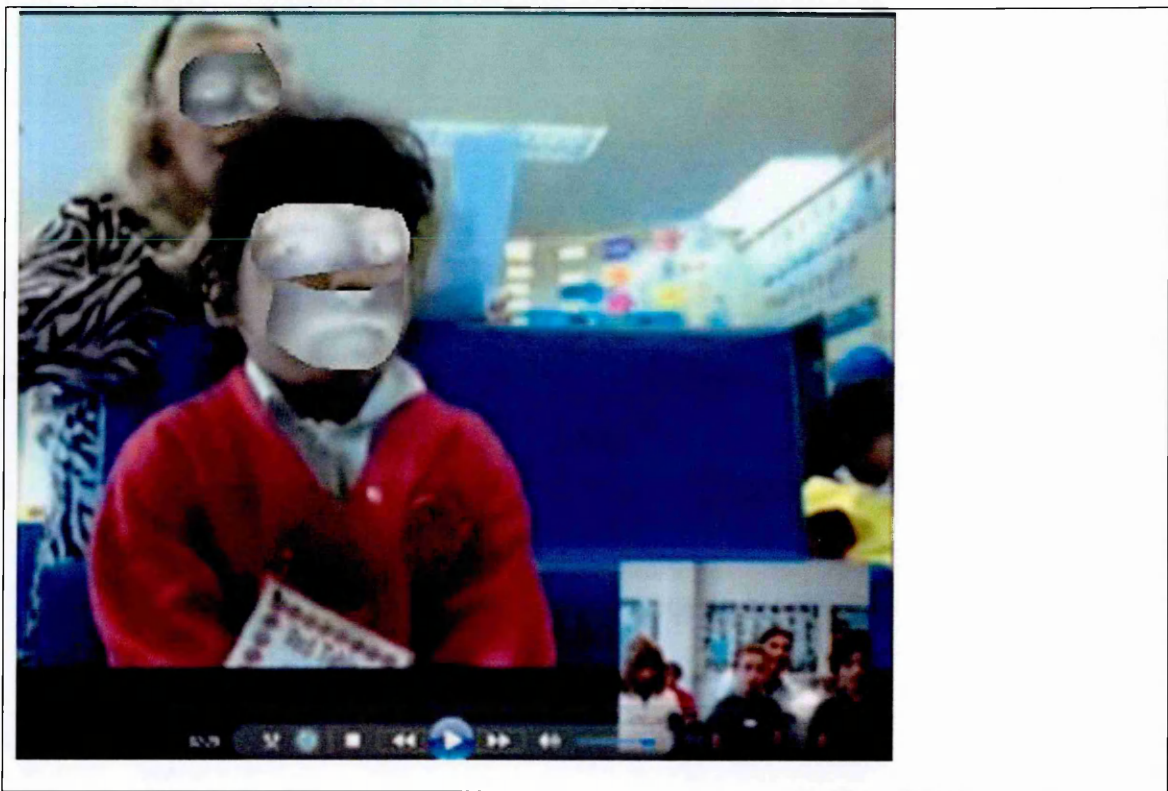


Figure 7. Teacher involvement (28 September 2011)

Table 8. Verbal transcription showing teacher involvement (28 September 2011)





Time	Screen Shot	Jane	Karen	John	Lee	Teacher, Mrs M	Teacher, Mr A
02:29						I'm going to pass this over to [redacted] because [redacted] is going to be talking to "pupil 3". Ok?	
02:34						(to [redacted]) Ok then, "[redacted]" introduce yourself.	Right yes.. That will be fine. So [redacted] will be asking her questions to [redacted]
02:48		Why do you like... My name is "[redacted]" Why is Lasagne so good "[redacted]"?					
02:55				Because it has lots of things that I like			



Figure 8. Students appearing on-screen with the teacher off-screen (07 December 2012)

Table 9. Verbal transcription of the conversation (07 December 2012)





Time	Screen Shot	Gary	Mary	Heldi	Ian	David	Nigel	Olive	Paul	Ursula	Teacher, Mrs M	Teacher, Mr A
01:15		Ok	[Ok]	[Ok]	[Ok]	[Ok]	[Ok]		We are going to do for you ... a Christmas quiz			
02:00										First is "pupil 7"		
02:48			Mixed up						Can you see that? ... It is a Christmas word ... But it is et ... they are, they are ...			
03:03					I think it says Santa	letter?			Yes			



Figure 9. Olive showing letters written on the whiteboards

4.1.2 Personal front

Analysis of the personal front displayed by the children in the data adds an additional aspect of embodiment that is important to the study of how children are able to voice their thoughts through Skype. The personal front accounts for the personal characteristics associated with an individual, this might include someone’s posture, clothing, intonation, and so on. It is any visible aspect of a person that is physically displayed in front of others (Scollon and Scollon, 2003, p. 57). In the data Anna appears in front of the children sitting closer to the webcam and holding a piece of paper (Figure 10a). In the video data her head is held back, her tone is confident and she is the first person to speak. These aspects of Anna’s personal front index her role as the questioner. Anna

appropriates the basic generic form of school ‘question and answer’ (Bakhtin, 1986, pp. 61-2) switching between the different functions of questioning and feeding back, which is reinforced by her glancing between her question sheet and the webcam. From their seating position; in a group with straight backs and with hands on their laps, the body language of the children from England would indicate their role as attentive respondents in the discourse, conforming to the same ‘question and answer’ genre assumed by Anna. Their adoption of this communicative role is reinforced by Claire, David, Ethan, Fiona, Gary and Heidi when they respond in unison to Anna’s introduction (Figure 10b).

10a The English children raise their hands to answer a question asked by Anna



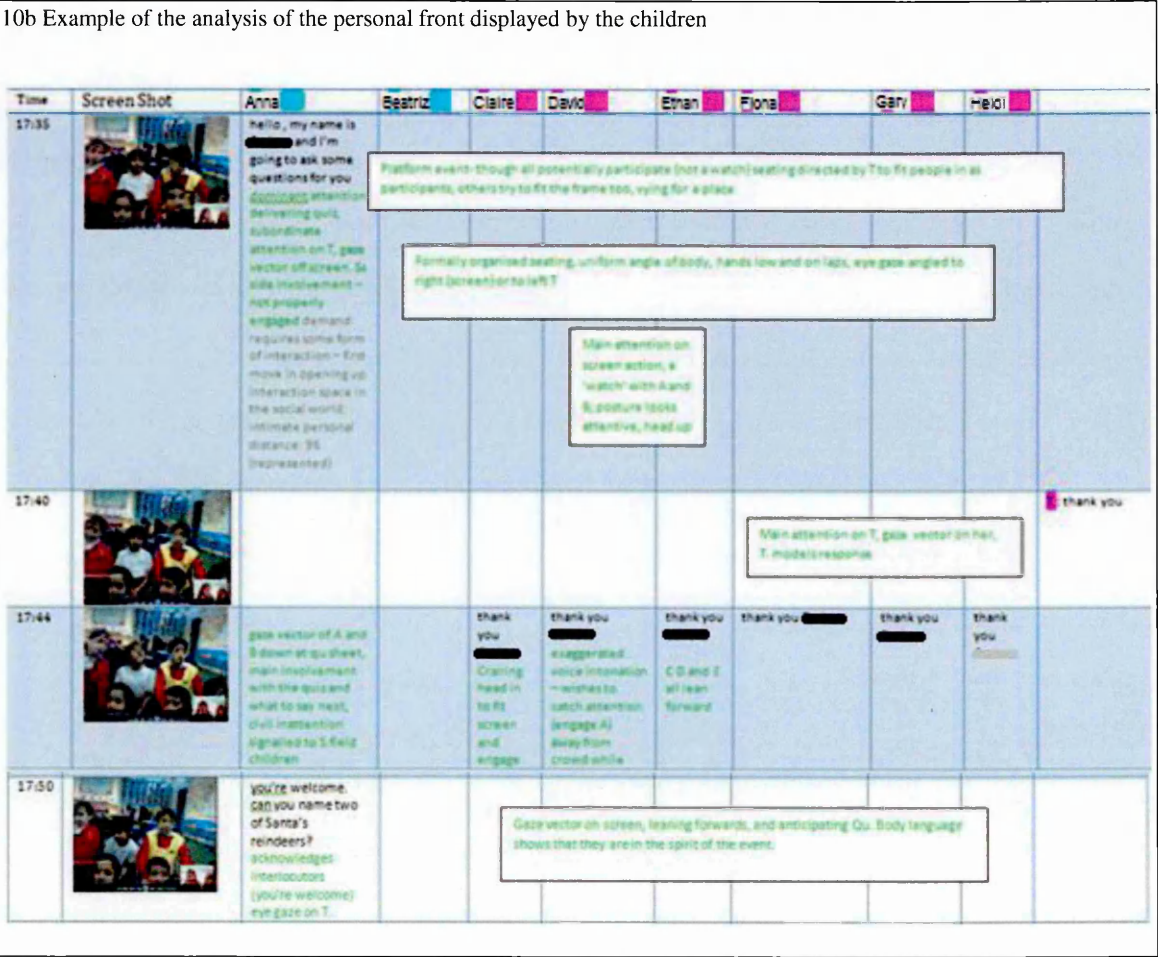



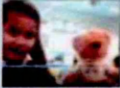


Figure 10. Analysis of the children’s personal front

While the students can be seen to conform to the expected communicative genre for the activity they are engaged in it is important to note that they are not bound by it. The English students maintain the IRF genre by raising their hands to index their wish to respond. This school learned behaviour defers the responsibility for turn taking to the person leading the activity. In this case the person leading the activity is Anna, however, the children’s attention is divided by the presence of their teacher, out of range of the webcam to the left of the screen shot. Also, Gary and Heidi rise up from the floor to get into the screen shot and David leans forward, filling the screen and attempting to index closer proximity to Anna through the represented social distance between them. The body language of these students would index an attempt to engage Anna, while their gaze vectors are all to the left of the screen indicating that they are ‘with’ the teacher socially in an inaccessible backstage area that is not shared with Anna. Ambiguity over how the dialogue should flow finally results in all the children calling out the answer together. The students’ sense of urgency is prompted by their main involvement with the task and their side concern with engaging Anna

ahead of their peers. This behaviour transgresses ways of being in the classroom, reflecting instead the type of action associated with a competitive game. Moreover, in the video data David rocks in his chair while responding, allows his hand to linger longer in the air and repeats his answer ensuring that his voice stands out from the other members of the group as contributing to the dialogue with Anna. The resourceful way in which David ensures that he can contribute to the social situation rather than simply respond to the social stimuli of Anna points to his sense of agency. This can be seen as being proactive which is a core property of human agency (Bandura, 2006). This example illustrates how much of what is read from a speaker's voice is conveyed through postures and movements to others in the same situation. Not only must social actors participate in social interactions in a meaningful way but they must be seen to be doing so (Scollon and Scollon, 2003, p. 52).

The importance of being visibly participative in dialogue is further illustrated in the data. When Anna introduces her teddy bear to the other children David fixes his gaze on the screen, exclaims 'oooooh it's very nice' and clasps his hands as though hugging something or someone (Table 10). The personal front conveyed by David indexes approval and interest in the bear, while the hugging gesture indicates familiarity with children's typical use for teddy bears. His behaviour, therefore, helps to bring teddy bears into the dialogue between the children. This prompts Ian to similarly share his experience of this type of toy by stating 'I've got a massive one at home'. However, the lower part of Ian's face is hidden from view below the level of the screen capture. The most visible resource comprising Ian's personal front is now his gaze vector which is off screen to the left hand side, indicating his social involvement backstage. Normally the demand for eye contact is the first move in opening up a social space for further conversation. By looking off screen, Ian indexes civil inattention (purposeful avoidance) towards Anna, despite his engaging with her voice and attempting to contribute to the dialogue. As a result Ian's interjection does not form part of the subsequent exchange and Anna moves on to a different line of conversation. It is only when Ian makes a more clear demand for social engagement, by lifting his head and looking directly at the webcam that his ideas are met with a response from Anna.

Table 10. Conversation between David and Anna

20:32		I wanted to show you my, my little bear Ted 					
					oooooh its very nice 		
20:39							I've got a massive one at home

The expressive “equipment” (as Goffman (1959) calls it) that constitutes the children’s personal front is conspicuous across the data when important elements are absent, as in the case of eye contact between Anna and Ian in the situation described above. Tables 11 and 12 and Figures 11 and 12 show other examples from across the whole data in which pupils were unable to express their voice clearly to each other. In each of these examples important elements of how the children would usually express themselves are missing. Table 11 is data from the pilot study which shows the beginning of an exchange between Violet (from England) and Wendy (from Portugal). The verbal transcription shows how Wendy repeats her opening ‘hello’ and misses the question that Violet asks. It would appear that Wendy was not expecting Violet to speak. The reason for this false start in the conversation might be found in the personal front displayed by Violet. Her gaze direction is predominately to the bottom right hand corner of Wendy’s screen signalling her social absence from the conversation. However, the children are using webcams that are separate from the monitor and the camera for the English children is located slightly above them and to the left of the children as they appear in the screen shot. This means that when the English children look directly at the represented image of the Portuguese children they look to the bottom right hand side of the screen. To look directly at their interlocutor and signal their social presence the children would need to look at the webcam and not the image on the monitor. By seemingly not making eye contact the children are unable to initiate dialogue and express their voices to begin with, leading to a false start in their conversation. The absence of personal front is taken to further extremes elsewhere in examples from the main study. In Table 12 a poorly angled webcam during leaves

Wayne (from England) with only the top of his head and his verbal speech to express himself. In this instance the conversation is again at the beginning. Despite the fact that Wayne is addressing Zack with his voice the absence of any other expressive equipment causes Zack to ignore this verbal contribution by talking over it. Without any visual cues to help the conversation her gaze then turns away from the screen signalling her social absence from her Skype partner. Again the data illustrate the importance of other people engaging with the speaker’s voice if it is to make meaning in conversation. For the children to connect with a voice the speaker must signal that they are socially present. Figure 23 shows an attempt by David and Heidi to signal their involvement in a conversation. The position of their webcam in relation to the children means that David and Heidi do not have the same access to the visible semiotic resources that make up their personal front as their classmates. They seem to sense that their visible exclusion from the screen puts their ability to voice their ideas at a disadvantage and so crane their necks so they are included on the screen.

Table 11. A false start in the conversation and analysis of eye gaze.




Time	Screen shot	Violet indexed through language	indexed through the material world	Wendy indexed through language	indexed through the material world
5:00			Gaze to bottom right of screen	hello	gaze directly ahead
5:08			Gaze to bottom left of screen body angled to left (teacher)		body angled ahead (camera) holding book
5:10		[What is your book?]	Gaze to bottom right of screen holding microphone in an active position	[hello]	gaze directly ahead leaning forwards into the screen displaying face
5:13			Gaze to right body angled to left (teacher) microphone lowered	What? Can... May you repeat	gaze lowered (to mic) displaying face
5:16		What's in your book?	gaze to bottom right hand side of screen microphone raised		gaze ahead set back holding book

Table 12. A false start in the conversation and a poor camera position



Time	Screenshot	Wayne indexed through language	indexed through the material world	Zack indexed through language	indexed through the material world
0:05		[Hello CLIP my name is ... I am going to be talking to you today]		[hello hello, I can't see you]	gaze towards the screen body set upright and angled towards the camera gaze turns to the left (teacher)



Figure 11. David and Heidi craning their necks to be a part of the webcam image


Time: minutes,seconds

10:43




'Can you repeat?'

11:06



(unintelligible sound)

11:29



'Yes...ok'

Figure 12. Two Portuguese children trying to communicate with their Skype partner during a microphone fault

Being seen to participate in dialogue appears to be crucial to serving the addressee directed communicative functions referred to by Gullberg (2010). Gestures used by the children foreground

the main interest in the dialogue and so determine whose voice is attended to. The embodied actions present in the data would conform to the notion that gesture is not replaced by spoken language in children's language development. Instead, actions are combined with spoken words to express a voice (Hall *et al.*, 2013). These observations reinforce the need to attend to voice from a multimodal perspective as actions and words combine to negotiate meaning with others. Throughout the data there are incidents where analysis of the verbal language alone would provide a misleading impression of what is being expressed.

In Figure 12 it is verbal language that is absent from the expressive equipment available to the English children due to a microphone fault. In this sequence the fault means that the two Portuguese children (featured in the images) are unable to understand what is being said to them. The words are spoken by the boy on the left hand side of the screen shot. The sequence expresses more than can be read from just the written text. The boys' eye gaze vectors are broken away from their Skype partner and their facial expressions indicate that there is a problem with the communication. In the final screen shot the spoken words indicate that the boy has understood whereas his body language would indicate the contrary. The data show that his eyes roll upwards towards the ceiling and his voice takes on a flat intonation in contrast to his previously animated tone. In this excerpt embodied actions can be seen to serve speaker directed functions. The boy is able to exploit different representational resources to verbal speech in an attempt to indicate that there was a problem and also attempt to move the conversation forwards. Each of the expressive means available to the children cannot be attended to on its own without referring to the entirety of the multimodal ways in which the speaker expresses their voice. Often in the data the children's gaze will signal their absence from the exchange while their body language (the way their body is inclined or gestures such as smiling for example) signifies their presence. The interaction order in these Skype-mediated communications is often complex as the children move between different ways of being together. Movement between these different social roles is negotiated by the students through their embodied actions and, therefore, requires a multimodal analysis of children's voices. However there is also ambiguity in the data concerning the social presence and absence of the interactants during the exchanges. This ambiguity stems from the mediation of these online

conversations through a webcam which causes the children's gaze vector to break with familiar patterns of eye contact.

4.1.3 Sense of space and time

The notion of presence and absence in online communication previously commented on by Lamy and Flewitt (2011) is similarly at issue here. It is possible for an on-screen interlocutor to be signalled as present in a conversation through their represented position at interpersonal distance with another person, in front of a camera connected to a video conference space. At the same time they might be considered absent in the interactional order as their dominant attention moves backstage. In this sense one person is temporarily absent from the experience of the other. In the conversations above Ian's mixture of nonattendance and prominence during the exchanges contributed to the way in which voice was expressed through online interaction through his exclusion from, and later inclusion in, the conversation (Table 10). The children's ability to be socially present and absent from each other is an effect created by the social software; Skype. Skype, therefore, changes the ways in which two conversing groups of children can interact. This particular affordance of the software allows children to be present on screen while socially absent according to their gaze and has thus modified the ways in which children are able to express their voice in this environment. For both Vygotsky (1978) and Wertsch (1991) higher forms of human behaviour (including communication) are socially distributed and defined by the mediational tool used to carry out such activities. This sociocultural perspective affirms that the mediational affordances of Skype transform the way in which the students are able to socially access and orchestrate their ideas.

The data show that the physical spaces of the Skype conversation are not clearly and discretely bounded. The discussion above has already alluded to the presence of backstage activity in the data. This space is unequally accessed by the English and Portuguese children as the restricted capture of each webcam leaves unseen areas in each classroom for those reliant on the video conferencing image. A sense of this backstage space is demarcated instead by auditory signs, such as talk, laughter, the movement of chairs and other objects, as well as the embodied activity of those sat in view of the webcam. These signs also enter into the relationship with how children

express their voices. An example from the data shows the Portuguese children's view of the English children as they respond to getting an answer correct in a quiz given by the Portuguese children (Figure 13). A first impression from the image conveys a sense of closed in visual and haptic space; the children are sat shoulder to shoulder in two rows, bordered with classroom furniture to the left of the screen on the same line as the back row. The children appear to be afforded limited movement in this space and we might expect auditory/verbal responses to dominate the ways in which the children express themselves. However, as the activity progresses comments from the teacher and the students' gaze vector off screen to the left indexes activity from an unseen area of the classroom. This area of the classroom is important to the location of the discourse as it influences the spirit of the exchanges between the Portuguese and English students. When Anna comments 'that's correct, you are very good at quizzes' the English students respond by leaning across to the left hand side of the screen to 'high five' unseen members of the class. This embodied action signals to Anna not only their enjoyment of the activity but its positive reception by others beyond the visible area. The sudden freedom of movement shown by the English pupils within the space diminishes the formal tone of the social situation and conveys a shared sense of fun. The locus of control over the exchanges is seen to be in the hands of the students which facilitates further conversation with Anna.



Figure 13. Interaction between on-screen and off-screen members of the English class

Interplay between frontstage expressions of voice through the primary participants in the *with* social unit (the Skype partners), and backstage expressions between the primary participants and other members of their class is present throughout the data. A further example may be seen in Figure 14 which is taken from the pilot study. Representation of just the speech (Figure 14a) from the data section fails to show movement between these spaces. Frontstage and backstage activity is indexed in this section through embodied actions (Figure 14b).

14a Excerpt from the language transcription. Violet and Wendy discuss the book

Time	Violet	Wendy
5:16	What's in your book?	
5:20		It's from Justin Bieber
5:22	[I like that book]	[I've_]I've got it to show because it's a non-fiction book. If it was a fiction book it would have pictures
5:35	I really like that	[It wou]
5:40		Do you like Justin Bieber?
5:45	Yes...very much	
5:52		I also like it too...I have loads of things

14b Screen shots from the video data. Violet and Wendy discuss the book

(Wendy's view of Violet. Wendy is visible in the small screen located in the bottom right hand corner of each screen shot. The white square beneath her head is a book about Justin Bieber that she is showing to Violet)

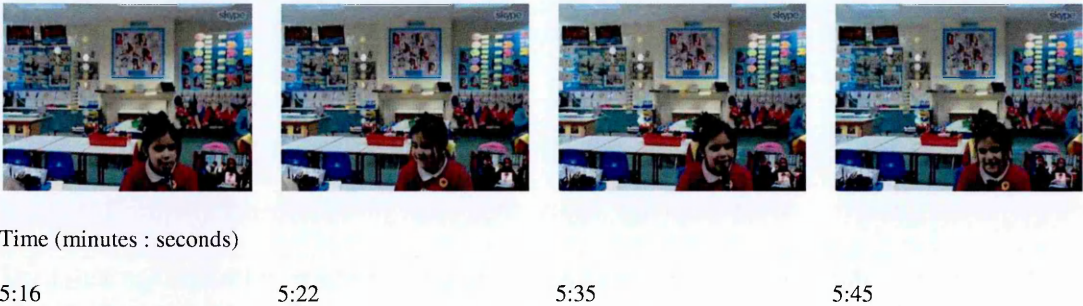


Figure 14. Two different representations of the conversation between Violet and Wendy

The present research follows Scollon and Scollon’s (2003) use of the term *involvement* to describe the focus of the children’s interest. Their involvement serves to define the occasion at a certain place and point in time. It is different from the children’s *attention* which accounts for the more transient activities that might be carried out when attending to their main involvement. The Children’s gaze direction, language and use of a non-fiction book present this object as the students’ main involvement while their dominant attention is on each other. This is in keeping with the learning task which is for Wendy to describe what she had been doing in her English lessons (she had been learning the features and vocabulary associated with reference books). On hearing what is in the book Violet lowers her gaze and smiles. This embodied action indicates a possible side involvement with the subject matter of the book. Violet indicates her interest in the book backstage by looking there and saying ‘*I like that book.*’ Only when this interest has been tested

and approved backstage does Violet then reiterate it frontstage to Wendy. Wendy responds with the question '*Do you like Justin Bieber?*' The question and Wendy's actions indicate her willingness to shift roles from a formal '*show and tell*' style activity with the book to a more equally balanced conversation about a popular musician.

Scollon and Scollon (2003, pp. 50-52) describe how time and space interact with each other. They refer to monochronism as a state of focusing on one thing at a time, displaying a sense of urgency and single activity. Polychronism, in contrast, refers to a person whose attention is divided and suggests a less laconic sense of time. In the example from Figure 14 the posture and activity of Violet would suggest a shift from focused activity in conversation with her partner to split attention between the off-screen area, activity on screen and the subject of the book. This move from monochronism to polychronism signals a shift from the original activity to digress on to the subject of Justin Bieber. This change in conversation would suggest a shift in the children's sense of time from the need to work through the task with urgency to an unhurried open conversation about popular culture. Figure 15a similarly shows children's sense of urgency when engaging in activities that reflect familiar patterns of interaction from school during the main study. The children all rise out of their chairs to answer a question ahead of one another. The same children in the adjacent picture (Figure 15b) let their gaze wander in different directions and their posture is more relaxed. In this image the children are no longer engaged in a 'school style' activity, instead they are talking freely about the bear in the screen in the bottom left corner of the image. Thus, gesture and gaze convey a psychological sense of the passing of time through the way in which they call attention to different perceptual spaces or focus in particular on one.

15a Monochronism. All the children try to answer the question at the same time



15b Polychronism. The children's posture embodies a more relaxed form of interaction



Figure 15. A screen shot of children answering a closed question adjacent to a screen shot of children talking about a teddy bear

In the examples above, like many children's conversations throughout the data, gesture and eye gaze are inextricably linked to the words that are spoken. Despite their varying levels of familiarity with Skype the children are able to use the meaning making resources available to them in creative ways to enhance how they express their voice in their L2. The function of gesture and eye gaze to enable children to call attention to the different social spaces around them is recurrent in other examples from the main study (Figures 16 to 20). Figure 16 shows how the children use their gaze and posture to invite a response from their classmates to the question 'what is a jacket potato?' asked by a Portuguese student. The children's classmates are sat out of the capture of the webcam in the backstage area of the classroom. This shift in attention alters the social group from being with the Skype partners to being with the children in the classroom. In Figure 17 the children's body language and gaze show that they are focused on their respective class partners as they share ideas before contributing to shared dialogue about their best school trip so far that year. The children's activity creates two groups within a group (this would be two *sub-withs* within a *with* using Goffman's (2009, p. 19) terminology). The separation of these groups is reinforced by the fact that the Portuguese children confer using their L1 while the English children use their L2. The body language and eye gaze of Gary on the left hand side of the screen shot in Figure 18 signals a shift in his role from the main conversationalist as he passes a tricky question to the backstage area of the classroom. In Figure 19 David, on the right hand side of the screen, points and looks up in

the direction of the lights to help him explain what a firework is, while Mary, in Figure 20, draws attention to the back of the classroom to talk about her artwork. By moving between these different perceptual spaces the children are able to move between different roles in a conversation and respond and adapt to shared interests. It is, therefore, possible to say that in the data described above semiotic resources relating to perceptual spaces are managed differently in the computer-mediated environment. For example, the ways in which the students employ the sign equipment at their disposal to move between the different frontstage and backstage public spaces which are simultaneously present during the online exchange would not happen in a face-to-face classroom. This movement can bolster or inhibit the expression of their voice as well as establish the type of talk and its direction.

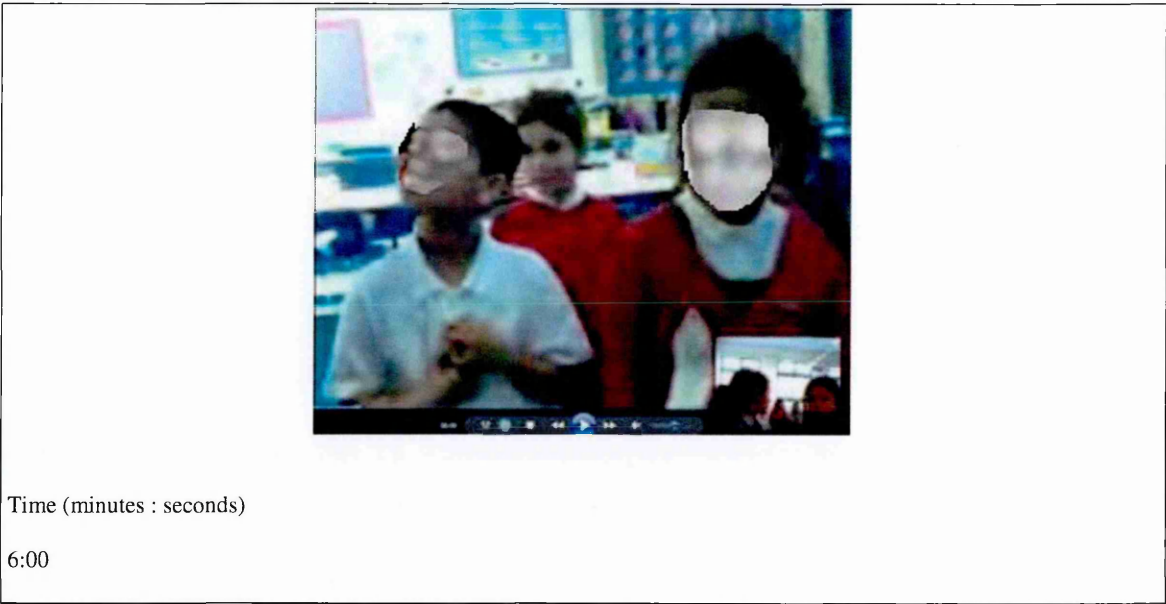


Figure 16. Students turning their attention to the off screen areas of their own classrooms

The Portuguese children are using their L1 while the English children use their L2



Time (minutes : seconds)
12:07

Figure 17. The children’s attention is on their class partner



Gary: *‘On Friday we celebrated Eid* ...
... It’s a Muslim festival’
Paul: *‘What is a Muslim?’*
Time (minutes : seconds)
20:20 20:28 20:55

Figure 18. Gary signalling a move to the off screen area of the classroom

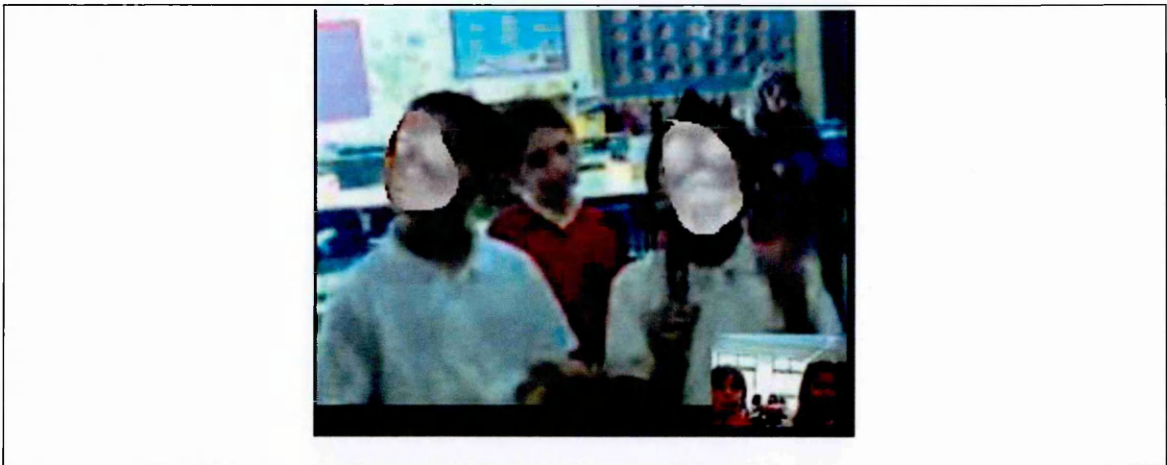


Figure 19. David (on the right hand side of the screen shot) using gesture and gaze

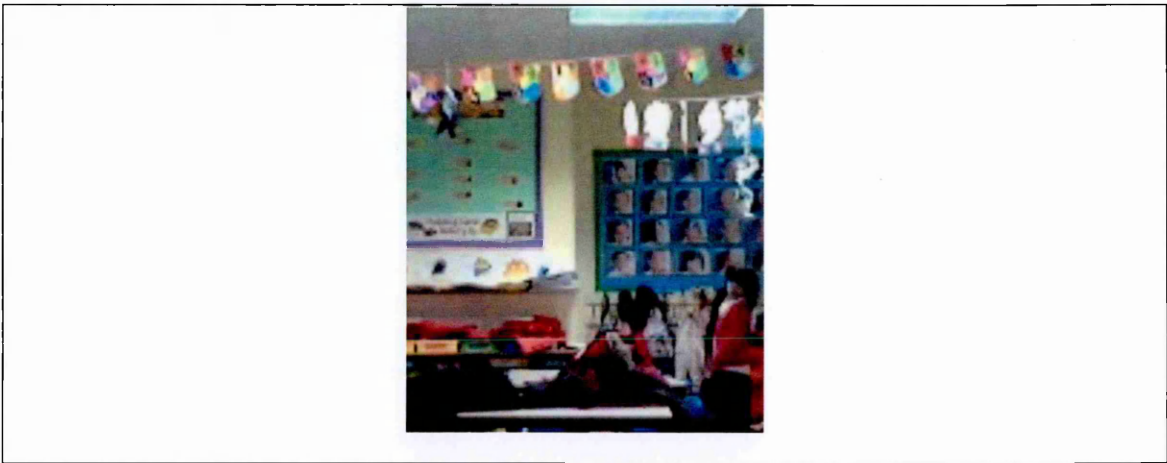


Figure 20. Mary gesturing to the display at the back of the classroom

4.2 Visual semiotics

The previous discussion described how what the students wished to express is placed in the world through the interaction order. The following section will now explore the ways in which the interaction order is represented through images, signs and objects in the data. This aspect of how voice is expressed online is described by the visual order (Scollon and Scollon, 2003, p. 83).

4.2.1 Modality

The way in which the students quickly recontextualise the school modelled language and behaviour patterns relating to the primary “question and answer” genre has been discussed above. The ease with which they collectively engage in task based discourse can be further explained by considering the effect of the visual order at the macro level of the data set. The ways in which the








pupils engage with the task is also influenced by the visual suborder of modality (or colour). Certain colours and colour schemes emphasise the primary school setting. Flat primary colours are mixed together to create eye catching tones. In nature colours rarely appear in their pure, primary form. A high degree of correspondence with what we see in nature with the naked eye is considered high modality. High modality is modulated colour. In contrast the colours of the Primary classroom are predominantly flat colours which may be perceived as pure, simplified and bold. They express colour as an elementary quality of things and are considered low modality (Kress, 2011, p. 358). The low modality (flat characteristic colours) of the classroom is similarly reflected in the uniforms worn by the children. These features index the space as being an 'in school' context rather than an out of school 'home' one. For anyone familiar with such settings these colours help index the type of social encounter that might be expected to take place in this environment. In addition, the high illumination of both spaces indexes their function as a place of work and learning. Modality is therefore connected to the relationship between the learning task and voice. Throughout the data the bright lighting and display of primary colours encourages the 'on-task' behaviour of the students by setting a spirit of classroom activity. At the beginning of the micro segment of data used in this analysis the ways in which the visual order is represented through Skype video conferencing technology support the 'in-class' behaviour of the students (such as raising hands and sitting in rows) which helped to maintain the IRF discourse structure.

4.2.2 Location, visual signs and objects

Nevertheless, 20'12" seconds into the Skype session the nature of the discourse has changed from task based activity to talk that grows around the central topic of Anna's teddy bear. How this change is orchestrated is visible in the visual order from a closer (micro level) analysis. At 20'07" seconds Anna runs into the screen shot from the right hand side (the position indexing something new), she leans in to the camera and then exits again from the right. This action signals to the English children where to look next (Figure 5). A teddy bear then appears in the right hand margin of the screen signalling a new topic for discussion. The appearance of the bear seemingly by itself provokes increased noise and movement from the children which suggests their captured interest. The bear, therefore, acts as a tool to offer further interaction between the children. Anna is able to

manipulate semiotic resources and engineer a change in the type of conversation. The imaginative way in which this is achieved points to her strong sense of personal agency. This is further illustrated when Anna brings the bear to the forefront of the webcam, displaying the symbol of the English flag on its jumper and asks ‘can you read his belly?’ (Table 13). The bear is positioned to the side of Anna indexing new information; an attempt by Anna to establish an area of shared experience with her English Skype partners. Anna’s resourceful manoeuvring of signs and objects shows how the culturally acknowledged tools of a teddy bear and a flag are individually shaded and toned when they are used to express Anna’s voice.

Table 13. Example from the analysis of the visual order

20:44		(can you read) (his belly?) brings prop to forefront so that flag and 'England' become visible as new information on the left of the screen. A is establishing common ground with Skype partners					(I've got one at home)
20:51		Can you read his belly? yes					
21:00		yes			(It's our flag)  England		
21:10		Um, my grandmother gave it from .er. London yes					
21:20					oh		shared connection prompts response – talking about home I've got a massive teddy bear at home 

The screen through which the children express their voices when using Skype reflects both the tools for its expression as well as the background in which voices engage. Skype provides a visual

medium for voice that allows children to represent objects, actions and feelings with something that stands for them. Depending on their level of development, such ability may or may not be paralleled by children's corresponding ability to represent these in language (Cassell and Ryokai, 2001). In this situation the material means for expressing a voice is expanded to include *the silent language* (Hall, 1959) of paralinguistic or concrete objects that may be selected by a communicator to express their thoughts. The example above shows how a teddy bear is used to represent a Portuguese child's connection to England and to establish common ground with the other students. Figures 21 to 27 highlight other examples from the data in which the children use their symbolic imagination to voice their ideas with others. In the first screen shot (Figure 21) the boy on the right of the screen is holding up a scarecrow that he has made in school. The boy on the left mimes terror to represent his notion that scarecrows should be scary. Figure 22 shows John holding up a rectangle to help Ethan, his English Skype partner, think of four facts about the shape. These facts are used as clues to help Lee, in the middle of the screen shot (35b), to guess what the shape is. In the next example (Figure 23) the Portuguese children are using word cards to play a word game in which they must give four facts about a particular word so that their English Skype partner (36b) can try to guess the word they are thinking of. In Figure 24 the Portuguese children use large plastic Euro coins to help them to explain how money is different in Portugal to the money the English children use. Figure 25 shows children trying to clarify what a firework is. They use their hands and fingers to signal an explosion and so represent the action, illustrating the verb 'explodes.' Similarly, John, in Figure 26, uses his hands and fingers, this time to mime a pair of glasses. He is trying to explain that it is hard to see what is happening on the screen in front of him. The final screen shot (Figure 27) shows Wendy holding a book with a picture of Justin Bieber on the front of it. Here the book signals the girl's interest in, and experience of, the popular musician. Through gesture and the use of objects the children learn about representational relationships (i.e. X stands for Y in context Z) (Hall *et al.*, 2013). By using objects and gestures to represent words in the conversation the children are able to extend their voice to communicate things that they might not be able to using words from their L2 alone. This capacity for making meaning motivates the children to share their experiences with their social partners. Gestures and objects can fill the

lexical gaps that children have or help to clarify things that are expressed in words, subsequently leading to further developments in spoken language.

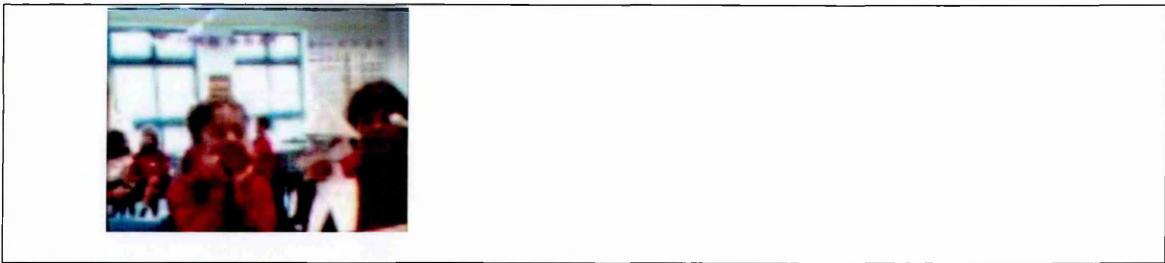



Figure 21. Paul gesturing in response to the scarecrow

22a Ethan is giving clues for Lee so that he can guess what shape is being held up behind his head



22b John, on the left, is holding a shape behind Lee, who is sat in the middle. Lee must guess the shape from the clues supplied by Ethan, his English Skype partner (22a)

Figure 22 Children collaborating online to play a maths game

23a Portuguese children show words on plastic bricks and give four clues about one of the words. That word is the ‘word wall word.’ Their Skype partner must try to guess the word after each clue



‘Can you guess our word wall word? It has a silent K...’



23b Ethan is trying to guess the ‘word wall word’ (23a)

Figure 23 Children collaborating online to play a spelling game



‘This is not the real money. This... this is just plastic’

Figure 24. Portuguese children showing large plastic euro and cent coins



‘Is it the thing that explodes?’

Figure 25. Children using gesture and verbal speech

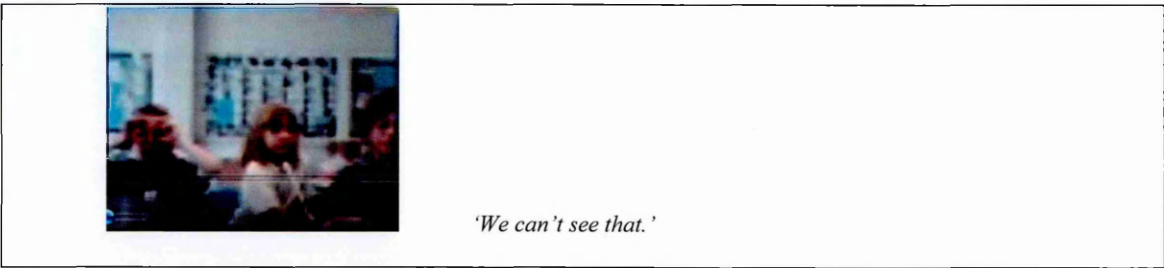


Figure 26. John (on the left of the screen) using gesture and words to communicate

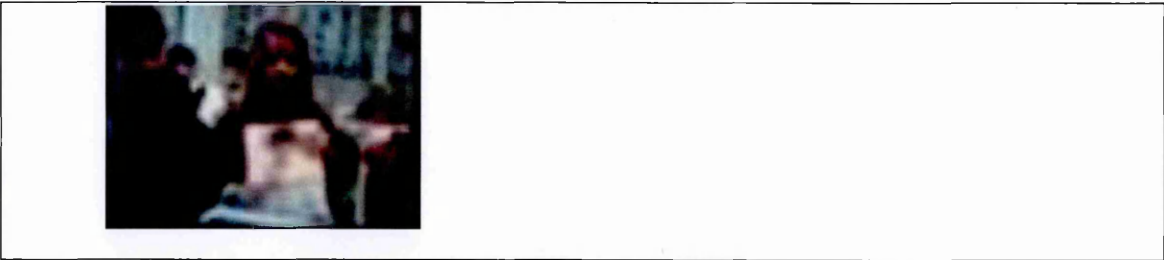


Figure 27. A book is used as a visual aid (taken from the pilot study)

Micro analysis of the data would, therefore, suggest that the orchestration of resources in the visual order does impact on the nature of what is said and done by the conversationalists. What and how meanings are negotiated in this environment are contingent on how visual semiotic resources are represented through Skype and the way in which this enables ways of being together to be achieved through the interaction order.

4.3 Place semiotics

Place order is the final frame for analysing the data which accounts for the effect of the placement of signs on the way voice is expressed. In the macro data segment the importance of the place order is in evidence during the transition from the ‘on-task’ discourse of the quiz to the subsequent ‘off task’ talk around Anna’s bear. This theme is explored and discussed as it relates to the wider body of data.

4.3.1 The classroom space

The discussion on visual semiotics has suggested that the macro data segment conveys the low modality and high illumination of the two areas represented through the computer. In addition

noise from users of the backstage space, the moving of chairs and tapping of pencils suggest that this is a special use area; a classroom. The built environment is seen to favour ways of being together, and so favour the kinds of expression that are typically seen in this sort of space. The view of Claire, David, Ethan, Ian, Fiona and Gary sat in orderly rows with their backs straight and their hands in their laps (Figure 28) conforms to a commonly understood way of expressing active listening to others in schools. The children’s behaviour is situated. The aggregate effect of these various modes of communication is to help give voice to Anna’s on-task activity when she delivers the quiz.



Figure 28. Children sitting in rows

4.3.2 The third space and exophoric referencing

When Anna runs in and out of the screen capture at public distance (Figure 5) her body language expresses something that goes against public expectation of the ways in which classroom interaction is conducted. In other words Anna transgresses the messages given off by the semiotic resources that characterise this space as being a school space. This transgression is compounded by the introduction of a teddy bear in the right hand margin of the screen. The bear introduces an element of exophoric indexicality in that it can be seen as a sign of Anna’s lived experience outside of the classroom and therefore indexes a space outside of the immediate context of the conversation. The transgressive activities of Anna transforms the classroom space for conversing into one in which school directed activities can be bolstered by the connections the children make with their lives in the world beyond, thus creating opportunities for talk that fits more closely with

the exploratory pattern described by Wegerif *et al.* (2004). The video conferencing forum can be thought of as lying somewhere between the formal ‘classroom’ space and the informal out of school ‘home’ space. This is reminiscent of Gutiérrez’s (2008) understanding of the notion of the *third space* in which teaching and learning roles are flexible, giving way to unscripted dialogue in which there is equality of participation. Therefore, some transformation in the dialogue resulting from the transformation of the video conferencing environment through which the children’s voices are mediated might also be anticipated.

Bakhtin (1986) suggests that the meaning expressed by a voice emerges from somewhere between the speaker’s intent and the response of the addressee. This relational view of language is dialogic and fits with the notion that talk grows around a central idea rather than through turn taking in an exchange of information. If the introduction of the bear (first discussed in chapter 5.1.1 in relation to Interpersonal distance) is taken to mark the transformation of the conversational space into a third space, we might expect a non-linear flow of dialogue to be present in the data from this point as the children negotiate meaning together. The bear is offered as the central theme for discussion in the data. David’s response to viewing the bear is to hug his arms to his chest and exclaim ‘oooooh it’s very nice’, while Ian states ‘I’ve got a massive one at home’ (Table 10). These actions can both be read as exophoric signs which index the children’s experience of teddy bears outside of the immediate conversation. The children are helping to establish a shared area of interest with Anna. Mercer (2000, p. 119) claims that finding common ground is important to creating a sense of community between people.

As Anna ends the conversation David waves his arms as though signalling to someone who is far away and calls out ‘merry Christmas, boa tarde, boa tarde’ [*merry Christmas, have a good afternoon, have a good afternoon*] (Table 14b). The embodied actions of David index his awareness of the actual space between his Skype partner and himself. By using Anna’s home language, however, he is able to bridge this space. Moreover, he is able to make exophoric reference to a prior Skype conversation in which he learned the phrase ‘boa tarde,’ adding an expression of the children’s shared history to the theme of shared experience. When all of the English children say ‘boa tarde’ to Anna she understands what is happening and responds in the

same way (Table 15). The English teacher then prompts the English children to say ‘Feliz Natal,’ a Portuguese phrase meaning *Happy Christmas*. At this point Anna connects David’s link back to the earlier conversation where she learned some words in Urdu and attempts to say goodbye to the English children Urdu. The dialogue subsequently evolves into an explanation of the appropriate response to the phrase *salam alaikum*.

Table 14. Examples from the analysis of place semiotics












14a David’s conversation with Anna				
21:00		yes		(It’s our flag) England situated in space –our flag – introduces idea of nationality and difference
14b David (from England) says goodbye using words and gesture to Anna (from Portugal)				
23:28	 D is waving arms to say good bye , even though he is in restricted space, transgressive and unexpected, as though signaling to someone who is far away, this is followed with the use of A’s L1 – awareness of real separation in space.			(merry Christmas) (boa tarde) (boa tarde) throw back to idea of difference introduced by flag – attempt to make connection – using A’s L1: exophoric reference, situated use (though viewed as decontextualised – Ss are surprised) relating to previous conversations in which ss shared some words from their L1

Table 15. English and Portuguese children exchanging some words in each other's L1

23:32		have a good christmas			boa tarde					
23:39		laughs 		(boa tarde)	(boa tarde)	(boa tarde)	(boa tarde)	(boa tarde)	(boa tarde)	
23:46		boa tarde								
23:52				(feliz (natal)	(feliz (natal)	(feliz (natal)	(feliz (natal)	(feliz (natal)	(feliz (natal)	say feliz natal
24:01		salem alaikum  responds with attempt to speak a greeting in L1 of the Ss—referring back to previous dialogue in different Skype session—situated								laughter

Exophoric references to places beyond the classroom are a feature of child-led communication in the data. A teddy bear (Table 10), a book about Justin Bieber (Figure 14), a scarecrow (Figure 21), large plastic coins (Figure 24), words and phrases from children’s L1 (Table 15) are all examples in the data described above where children make reference to out of school activities in an attempt to find ways in which their lives are in association with each other. Table 16 along with Figures 29 to 30 show further examples from across the data of how the children try to connect with each other by giving voice to interests that they have outside of school. Table 16 is an excerpt from a conversation in which Fiona, Olive and Beatriz teach each other words and phrases from their L1. The next example (Figure 29) shows Zack holding up a plastic dinosaur. He wishes to express that the dinosaur section was the most enjoyable part of a recent trip to a museum for him. The dinosaur helps to establish the focus of the conversation and acts as a vehicle for him to express his technical vocabulary, authenticating his claim to be a dinosaur enthusiast. The final screen shot (Figure 30) shows John demonstrating a magnetic toy that he has brought to school from home.

These signs and objects associated with other places are helpful resources for children to negotiate meaning together. They provide opportunities for the students to lead conversations based on familiar aspects of their lives. Having the chance to engage in talk motivated by the children’s own

interests is a break from the more predictable interaction pattern of IRF talk in the classroom. Bakhtin (1986) advances the view of voice as a social act, connecting people. Therefore, to be able to think together children need to be able to negotiate common understandings through their voices. What binds children together in these Skype conversations is the social and emotional connectedness they experience when they exchange feelings and attitudes towards shared aspects of their lives. The data show that child-led conversations are driven by children's individual interests. These conversations are sustained when those interests are appreciated and shared by the addressee. Child-led talk allows for a degree of informality on Skype as there is no teacher visible at the front of the class directing the discussion. The informality that is afforded children concerning what is voiced and how it is voiced, provides them with a dialogic third space (see Gutiérrez, 2008) in which they can be more reflective and creative together.

Table 16. Fiona sharing a phrase from her L1

Time	Screen shot	Fiona indexed through language	Olive indexed through language	Beatriz indexed through language
4:57			Can you teach me good afternoon in your language?	
5:03		this is how you say goodbye		
5:13				goodbye?
5:20		Allah hafiz		
5:35				anna ...bar
5:40			[laughter]	[laughter]
5:47		Allah hafiz		
5:54			[Allah hafiz]	[Allah hafiz]

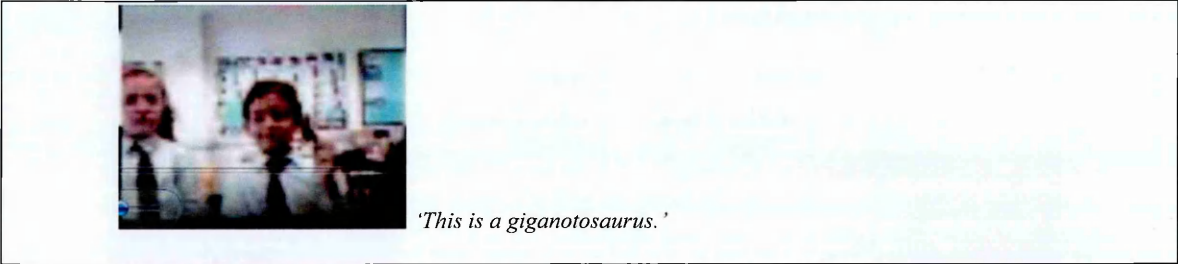


Figure 29. Child holding up a plastic dinosaur

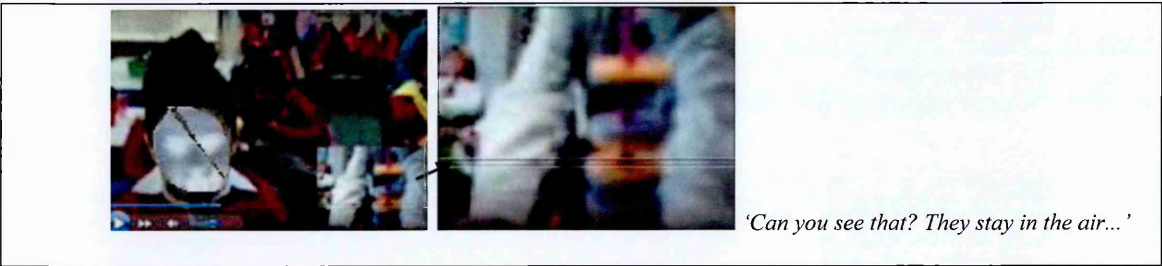


Figure 30. John showing some magnets

It can be concluded from the data that the deployment of resources in the place order supports the ways in which the students are able to think together. The placement of signs within the material context of the interaction makes certain semiotic resources prominent and shapes the action taken by the children. An example is Anna’s bear. It is significant as a sign that offers alternative discourses to be constructed through the children’s actions. The bear is a transgressive sign that transforms the video conferencing space into a more flexible social context; a third space. In this area meanings can be negotiated in the target language around a central idea rather than through turn taking in an exchange of information (such as using the IRF pattern of interaction). Moreover, the bear extends the boundaries of the children’s interests to their lives beyond the classroom. The informality associated with out of school activities supports the exchange of ideas, connecting the children’s voices.

This section has presented the findings obtained from a geosemiotic analysis of the video data of children’s communication through Skype, focussing on the multimodal ways in which they express their voices. The findings illuminate how conversations are managed and maintained by the children in a video conferencing environment. The data were analysed from a qualitative perspective so the findings have been illuminated with extracts and screen shots from the

recordings. These findings will be discussed in the following section in an attempt to provide answers to the research questions.

5.0 Discussion

A geosemiotic approach to analysis of the data from the study has been used to identify how interactional, visual and place orders manifest children's expression of voice in a video conferencing environment. Essential findings from the analysis of the data will now be described as they relate to the research questions posed by this current study.

5.1 How do children experience and express voice in a video conferencing environment?

Webcam-enhanced online communication creates its own particular sets of conditions which affect the ways in which children are able to use resources in the interaction order to express their voice. A point of divergence from familiar patterns of communication is the way in which the children could control how interpersonal distances were represented to their partners by changing their proximity to the webcam. The children used different representations of personal space to negotiate different ways of being together. The limited capture of the camera also created visible (on-screen) and hidden (off-screen) areas in each classroom. Through Skype the children were able to simultaneously manage frontstage and backstage areas of the video conferencing forum. The freedom to move between these different spaces gave them access to different ways of unfolding their actions in relationship to each other. Through taking on different social role performances such as questioner, respondent or partner the children were able to play out their conversational aims. The ways in which dialogue was allowed to evolve was dependent on movement between these spaces and this movement was in turn dependent on the children's ability to index different ways of being together through their embodied actions.

In this environment both embodied cues and verbal cues are, therefore, important to the research question of how children experience and express voice in a video conferencing environment. Bakhtin's (1986) dialogic model for the act of communication is particularly pertinent here. The model suggests that messages conveyed by a conversation develop from interaction between different voices. In other words dialogue grows when the speaker's voice binds with the voice of the addressee to make shared meaning. During the Skype conversations the children creatively used

multiple modes of communication to make these connections happen. For instance, the exchanges between Anna, David and Ian about teddy bears (section 4.1.2, Table 10) convey meaning through the various ways in which they attempted to contribute their voices to the evolving dialogue. The ways in which the children combined their own multimodal expression of voice with the objects, signs, movement, intonation, timing, eye gaze and language of others conveys at the same time a high level of personal agency with a sophisticated understanding of social integration.

Multimodal resources are seen to serve a variety of speaker and addressee purposes in the data. These functions include indicating different social spaces, managing roles in the conversation, indicating a lexical gap, enhancing the understanding of spoken language and representing something that cannot be voiced through spoken language by the child. Hence, for children to successfully express their voice in dialogue not only must they have something to say, they must be visibly seen to say it. The embodied actions present in the data would conform to the notion that gesture is not replaced by spoken language in children's language development. Instead, actions are combined with spoken words to express a voice (Hall *et al.*, 2013). Thus, an important outcome of this investigation is to endorse the need to attend to voice from a multimodal perspective when exploring how children express themselves in their L2 during telecollaboration.

5.2 What effect do the affordances of Skype have on how voice is expressed?

In the interaction order ambiguity over the presence and absence of the participants during the online conversation came from their ability to signal themselves as simultaneously present and absent. The students' appearance before the webcam signalled their presence in a social encounter while their gaze vector might indicate their social absence. In many instances it is the location of the webcam away from the screen that affords this ambiguity between being socially present and absent during a conversation. Tension between these conflicting states of being can be seen to influence whether the children were able to add their voice to the dialogue. If children mistakenly signal themselves as socially absent from their partner it can lead to them being excluded or overlooked during a conversation, subordinating an activity or topic they wish to focus on in place of another and prompting the need to repeat previous exchanges.

Skype affords conversations to be conducted in a visual way which supports children's ability to make meaning. If they are able to use the material environment about them creatively, the children are provided with the means to represent their ideas beyond spoken or written words. The children in the data used a variety of visual and gestural means in creative ways to voice their ideas to others. Gestures, signs and objects were used to represent activities, interests and lexical items that are important to the children in their lives. If we assume that the meaning expressed by one's voice emerges somewhere between the speaker's intent and the response of the addressee (Bakhtin, 1986), then the representational relationships evoked through using gestures or objects in place of words play a key role in helping children understand what is expressed by a voice. The enhanced capacity for making meaning that representational resources (such as gesture or objects) bring further motivates the children to share their experiences with their social partners, and so bind their voice with others through dialogue. This relational model for how children express their voice together fits with the notion that dialogue grows informally around a central theme. Online conversations led by the children's interests and ideas do not seem to follow formal 'drill' or 'initiation-response-feedback' genres associated with classroom talk (see Sinclair and Coulthard, 1975, and Mercer, 2000). Instead, the affordances of Skype seem to suit a relational view of language in which talk grows around a central idea. In these instances, the role of the task set by the teacher is to create situations in which children can give voice to things in their lives that will connect with the voices of others. In the data, opportunities for talk to develop from the children's interests were most frequently encountered when the children were involved in deciding the theme of the session (such as 'games we play in lessons' or 'our favourite toys') and deciding what they would like to share with others during that session.

The visual order also influences what is expressed and how as a result of the limited visual field afforded by the static webcam capture of the two classrooms. The image conveyed to each Skype partner is restricted to what is captured by the lens of the webcam for each computer. Those areas that fall within the range of the webcam become part of the more public social space shared with both members of the Skype conversation, the frontstage. The classroom areas that fall outside of the range of the webcam lens cannot be seen by the Skype partner who receives the image. This

affords a private social space that is only accessible to the person in that particular classroom, this is the backstage area. These spaces are unevenly represented to each Skype partner allowing them to only fully discern together what happens in the frontstage area. A function of gesture and eye gaze recurrent in the data is to enable children to call attention to these different social spaces around them. By moving between the different perceptual spaces the children are able to move between different roles in a conversation and respond and adapt to shared interests. In this way the students are able to manage and sustain their online conversations. These different areas can also be brought into play by a speaker to support or limit the expression of their voice and privilege different respondents in the exchange as well as establish the type of talk and its direction. The ways in which the students employ the sign equipment at their disposal to move between the different frontstage and backstage public spaces which are simultaneously present during the online exchange would not happen if they were face-to-face in the classroom. It is, therefore, possible to say that in the data described above the affordances of Skype enable children to manage the semiotic resources used to voice their ideas differently in this environment.

5.3 How does the design of the learning task affect voice?

Modality is connected to the research question of how the design of the learning task affects voice. Modality encompasses aspects of the built environment, such as the strong colours and high illumination of the primary classroom, that establish the context in which the children encounter one another. Different contexts support different types of social encounters. The bright lighting and primary colours encourages the students' talk to follow the psycholinguistic aspects of the task design by setting an ethos of classroom activity. In the micro section of data the task was a quiz set by the children that followed the generic form of school 'question and answer' or IRF discourse. The low modality of the surrounding space is representative of a school and therefore encourages traditional learning behaviours. It follows that the ways in which these aspects of the visual order are represented through Skype support the appropriation of this 'school style' discourse by the children. These exchanges can be considered *situated* in the sense that they reflect the learning environment in which (and from which) they are constructed. Modality forms part of the relationship between the learning task and voice. By indexing the conversational space as an 'in

school' space certain behaviours and ways of being with others are privileged over others. This places a degree of control over the kind of language that will grow from children's participation in the activity.

However, the creative way in which the children purposefully deployed semiotic resources to give voice to their ideas influenced the way in which dialogue evolved. The children were not just passively acting out roles in a conversation. They were able to proactively determine their own trajectory through the Skype encounter by their deployment of the semiotic resources available to them. For example, signs, objects and words were all used by children with agency to take the dialogue beyond what might be required to fulfil the needs of the school-set task. Resources such as the children's L1, a plastic dinosaur or magnets brought from home (Figures 44 to 46) allowed the children to connect aspects of their life outside of the school to their activity in school. In so doing they created opportunities to forge connections with the interests of their Skype partners and influence what their voices are able to express. In the data the learning task might have served as a helpful starting point for dialogue, however, the locus of control over the way in which the conversation evolves rested with the children rather than the direction of the set task.

A broader view of the data would, therefore, suggest a tension between the situated ways of communicating that might be anticipated by the children and teachers in the classroom as they collectively work on a learning task and the idiosyncratic ways in which individual children are able to connect their voice with others. Figure 14 illustrates the way in which children renegotiate the theme of their conversation during the pilot study from the situated teacher directed (psycholinguistic) task focusing on acquisition of knowledge (i.e. a discussion about the features of an information book) to a child-led co-constructed (sociocultural) conversation about Justin Bieber. A teddy bear, a flag and some words in the children's L1 are all employed in the main study in Table 14 to exophorically reference their lives outside of the classroom and make sociocultural links with each other through conversation. These exophoric signs help to steer the dialogue away from the school genre 'question and answer' pattern of psycholinguistic activity based around a quiz in order to give voice to the children's shared interests. Figures 44 to 46 show further instances in which children share aspects of their lives from outside of the classroom. By giving

voice to their interests beyond the school the children can forge real-world relationships with their Skype partners beyond what might be required to perform in a psycholinguistic task.

The school genres of ‘question and answer’ (from the main study) and ‘show and tell’ (from the pilot study) talk provide the starting point for the dialogues in Figures 19 and 26 respectively. From a psycholinguistic perspective these genres and the activity they encourage are deemed to be important for language acquisition. The show and tell activity relates to the features of an information book so one might anticipate vocabulary relating to information texts to be practised in the children’s conversation (such as caption, contents page, index, fact and so on), whereas discourse relating to the question and answer genre would suggest that children practice the accurate use of question forms. As Ellis (2000) put it ‘[the psycholinguistic] perspective is predictive, and, in some cases, deterministic. That is, it assumes that there are properties in a task that will predispose, even induce, learners to engage in certain types of language use and mental processing that are beneficial to acquisition.’ However, the children in this current study were purposefully given the freedom to act with agency when expressing their voice. By moving to the off-screen areas of the classroom and assuming an observer role the teachers placed the control over how the pupils interacted with the children themselves.

Robinson and Taylor’s (2007) understanding of *thirdness* can be helpful for theorizing how L2 speakers go beyond the psycholinguistic limits of the task design to express their voice. According to the authors the meaning that a speaker makes when communicating is not located in the speaker but in a third space somewhere between various dualities that affect language learners; either between the speaker and addressee (Bakhtin, 1986), between institutionalised and lived experiences of voice (Gutiérrez, 2008), or between the L1 speaker and the way they present themselves in their L2 for example. Psycholinguistic task designs do not recognise the relationships between these dichotomies, but focus on an individual’s linguistic performance instead. However, the reproduction of lexical items or grammatical forms by a child in their L2 is often not enough to sustain conversation and does not fit the process of engaging in talk for a real purpose. The limitations of the school-set tasks create a tension that prompts the children to communicate beyond the remit of the school-set activities. The children, therefore, begin to use the semiotic

resources at their disposal to expand their conversations into other areas of interest to them. For Gutiérrez *et al.* (1999) thirdness is associated with the tension and conflict in learning activities that can lead to a transformation in communication practices. This understanding of thirdness when applied to the ways children responded to the learning tasks in the current research gives helpful insights into how children use exophoric references to activities and interests outside of the classroom.

To begin with the predictive structure of the school-set activity would seem to help the children to engage their voices. It is possible to see elements of the anticipated language in the data transcriptions such as ‘I’ve got it [the book about Justin Bieber] to show because it’s a non-fiction book. If it were a fiction book it would have pictures,’ (Figure 14) or ‘can you name two of Santa’s reindeers?’ (Figure 10b) for example. However, as these conversations progress the children begin to explore other ways in which they can connect together. By placing signs (like the cover photo of Justin Bieber or a teddy bear) in the material context of the interaction the children create new possibilities for dialogue related to their shared interests from outside of school. What the children express in this situation is unpredictable and dependent on their particular locally determined experiences and goals. In other words communication between the children no longer fits the predictable pattern of a psycholinguistic approach and is closer to the style of interaction that characterises sociocultural tasks. The children manage semiotic resources to create a social space between these two perspectives. This space can be conceptualised as a third space. Multimodal resources are blended in creative ways to give voice to those aspects of the conversation that are important to the children. The ways in which children move beyond predictable patterns of expression to multimodal, idiosyncratic constructions of voice is in keeping with the transformation of communication practices that characterise learning activities in the third space (Gutiérrez, 2008).

Providing opportunities for children to carry out tasks in the third space between the in-school and out-of-school interests of the children would appear to lead to productive language learning. Activities designed according to sociolinguistic principles would appear to fit more comfortably with Gutiérrez’s (2008) model for third space learning. This is because the premise behind

sociolinguistic tasks is that learning happens in interaction with others. Learners first succeed in performing a new function (such as learning new vocabulary or a new phrase) with the assistance of another person and then internalise it so that they can perform it unassisted. In this way ‘social interaction mediates learning’ (Ellis, 2000, p. 209). Sociolinguistic aspects of children’s activities lead them to draw on resources and practices from outside of the school to extend their interaction beyond the limits of their verbal speech. This is reflected in the data through the use of physical objects and gestures by young learners to represent their ideas and interests in place of, or in addition to, spoken words. By combining material ways of expressing voice with verbal speech the children have a greater capacity to make meaning. Two examples are the plastic dinosaur and the magnetic toy which are being foregrounded in Figures 45 and 46. The children are able to elicit interest from their partners by making these resources prominent. The response of their partner will provide lexical items, verbal structures and questions that scaffold the construction of the children in the Figure’s voices. Thus, these material items support young learners’ thinking and help them to express more than they might be able to do by using just words alone. Moreover, exposure in a meaningful context to new vocabulary and phrases will help the children to reproduce them in later conversations as part of their own speech.

The school-modelled patterns of talk that are reinforced through psycholinguistic task design help young language learners approach the challenge of initiating talk with someone who is not well known to them. Familiar structures make it simpler for the participants to understand one another when used in conversation. However, Skype also gives children the opportunity to share experiences from outside of the school and let these support those developed in school. The above discussion has described how this process creates a third space for purposeful child-led interaction. This space is considered important to the ways in which children communicate through Skype as it can lead to productive language learning. In the third space resources such as objects and gestures bolster the meaning making potential of children’s voices allowing them to better communicate their ideas. Thus, a blend of psycholinguistic and sociolinguistic learning tasks allows children to benefit from familiar linguistic structures while challenging them to develop their communication beyond the language they have learned in school.

5.4 What role does voice play in helping children to think together?

Wegerif *et al* (2004) assert that in the classroom children have greater access to learning through understanding how to engage their voices with others in a social situation, than through understanding specific concepts such as those associated with maths or science for example. The work of these authors has shown how the active joint engagement of children with each other's ideas through *exploratory talk* will lead to learning. The model for exploratory talk used in Wegerif *et al's* (2004) research describes a way of using verbal speech in educational settings whereby talk develops from an initial concept according to the joint acceptance of well reasoned suggestions from each speaker. Thus, through a verbal exchange of challenges and counter challenges children arrive at shared meaning which, in the view of the authors, constitutes learning. In the case of the Skype conversations investigated in this current research the driving purpose behind the children's activity was to make meaning in their L2. With an emphasis on sustaining conversation it was socially appropriate for the children to focus on the free and open questioning that characterises exploratory talk, but there was little opportunity for them to engage in verbal debates. In place of challenging each other's ideas, the children more frequently engaged their voices to clarify and develop the input from their conversational partners. An example taken from the pilot study can be seen in Figure 14. In this example the verbal transcription (Figure 14a) would seem to show a pattern of talk that adds uncritically to what has gone on before. The input from each speaker is apparently accepted without discussion or significant amendment. This exchange would, therefore, appear to conform to Wegerif *et al's* description of *cumulative talk* (Wegerif *et al.*, 2004).

Of course, these conversations do not take place in a void, isolated from the world around the learners. It has long been acknowledged that in order to explore how children's conversations allow them to think together it is important to look beyond 'the bonds of mere linguistics and be carried over into the analysis of the general conditions under which a language is spoken'(Ogden *et al.*, 1946, p. 277). The current study would attest to this perspective. It has revealed how the physical circumstances in which voice is expressed can have important effects on the how children think together. If we consider the surroundings in which the children's conversation in Figure 14 is embedded it is possible to read their exchange differently. The transcription of verbal speech gives

the impression of focussed interaction between two children (Violet and Wendy). Figure 14b allows us to observe the way in which Violet moves her attention between the conversations with her Skype partner on-screen and other members of her class who are present (but not visible) off-screen. By shifting her gaze and, therefore, her social presence from the screen to the classroom Violet is able to voice her interest in the book to an audience in her classroom without directly interrupting Wendy. At the same time Violet's shift in attention from Wendy's discussion of the difference between fiction and non-fiction books indicates her wish to shift the conversation to something that is more familiar to her (the subject of the book; Justin Bieber). Wendy is able to monitor this activity through the represented image on her screen and respond with the question '*Do you like Justin Bieber?*' The free and open way in which the children are able to use different modes such as eye gaze, represented and physical space creates possibilities for the children to develop their conversations and build on each other's ideas. Rather than just the engaged activity between two children in the video conferencing space represented on the computer screen, a wider lens on the data shows how the material reality of the classroom plays an important role in the online communication. The way in which children are able to move between their material and online surroundings allows them to engage their voices in ways that do not conform neatly to the models for *exploratory* and *cumulative* talk, but contain features of both.

The potential sources of communication available to children on Skype are expanded beyond the multiple modes available through the software, to the multiple communicative possibilities that might be to hand (such as objects, space or sounds for example) as well as other children who might be physically present (Wegerif *et al.*, 2004). Discussion of the place order above illustrated how the different semiotic resources that are used to express a voice can find ways of connecting with the voices of others. The way in which voices make certain resources prominent (through the placement of the sign of the flag on the teddy bear at the forefront of the screen for example) finds associations with the lives of the respondents and so influences the subsequent action taken by them. If those interests are similarly shared by the child's social partner they then also voice that interest and so forth, in this way sustaining conversation together. Thus, to be able to think together children need to be able to connect with each other through their voices. If the class teacher is

willing to relinquish some control, then child-led communication on Skype are afforded a greater degree of informality as the conversationalists can engage each other without the visible presence of the teacher at the front of the class. The informality engendered by the absence of an authority figure gives children the freedom to explore communal ways of living and learning. The common ground they encounter allows them not only to consolidate their use of their L2 but to extend the boundaries of their shared interests.

5.5 The orchestration of meaning making resources to express voice

This present research has explored how voice is physically expressed through telecollaborative conversations. The first research question illustrated the multimodal ways in which voice is expressed by young language learners through Skype to manage conversations and support the negotiation of meaning. The second question has shown how the affordances of Skype allow children to bring resources such as objects, artefacts and images in to their discourse. These visual channels of communication not only help language learners to express more, they help to create the possibility of sharing interests from beyond the classroom. The ‘frontstage’ and ‘backstage’ classroom areas afforded by the restricted webcam view create new spaces and ways of either being together or socially absent from each other. These spaces highlight the importance of children visibly demonstrating their social presence (through eye gaze or gesture for example) to sustain their conversations. The third question revealed how a blend of psycholinguistic and sociolinguistic task design facilitated children’s multimodal expressions of voice and extended their conversations beyond what might be possible using verbal speech alone. The fourth question highlighted the value in supporting audio with visual channels when trying to make meaning with other learners from different countries and/or cultures. The children were able to explore and find different ways of expressing voice that allowed them to build connections with their addressee.

No single aspect described above is necessarily unique to telecollaboration through Skype, nor is it singularly characteristic of how voice is expressed in these kinds of online conversations. What makes the way voice is expressed and experienced through Skype in the language learning classroom different to other contexts is the ways in which resources (such as children’s display of personal front, the limits imposed by the screen capture, classroom layout, the learning task, the

contributions of the addressee to name but a few) all give meaning and shape to the ways in which children are able to give voice to their ideas. Thus, the voice expressed by a particular child is not only located in their linguistic contribution to the discourse. Their voice is located in the aggregate of meaning making resources which are semiotically dependent on each other. In other words to understand what is being communicated by children through Skype we must observe how voice is expressed through all aspects of the material and virtual world from which it is constituted.

6.0 Conclusion

This investigation began with a question: How is voice experienced and expressed by children in a video conferencing environment? Exploring this question through telecollaboration between two classrooms has meant addressing the additional research questions: What effect do the affordances of Skype have on how voice is expressed? How does the design of the learning task affect voice? And what role does voice have in helping children think together? There is a gap between children's increasing experience of communication software such as Skype in their lives outside of the classroom and the limited use of these sites to support learning in the classroom. Skype has the potential to provide a different space in which children are able to engage their voice with others for social and educational purposes. Yet at the time of writing this thesis there has been no investigation into how children experience and express voice in this environment which makes these questions timely and relevant.

In the absence of other cases to draw comparisons from the strategy used in this present investigation was to study a single case. To address the research questions this project interrogated a small video data sample of the Skype interaction in depth. A multimodal method of analysis was used, adopting Scollon and Scollon's (2003) concept of geosemiotics as a framework. In an attempt to identify the multimodal ways in which children were able to connect their voices through online dialogue the analysis teased out how voice was materially placed in the world and represented through Skype. This part of the analysis was closely grounded in the detail of the digitally mediated expression of children's voices. To ensure that the broader themes that this research project set out to explore would not be lost, in the discussion chapter a special effort was made to zoom out to include the entire data set, summarise the essential findings and relate them to the research questions.

This final chapter will start off by considering the pedagogical implications that arise from this thesis. It will go on to discuss the personal, professional impact of this study on my own practice. The section will then reflect on the methodological issues that have become apparent through this research. The contribution of this study to research will be outlined. Suggestions for further developmental research relating to children's expression of voice in a computer-mediated

environment are then highlighted. The section concludes with a description of the limitations of the current study.

6.1 The pedagogical implications of the study

The findings from the present study were obtained from synchronous conversations between children in their L2 which happened online through the video conferencing tool, Skype. An important purpose of this investigation was to discover how children experience and express voice through Skype. One major outcome of this thesis has been to endorse a multimodal perspective of voice to understand how children are able to express themselves with others through social software. By expanding their view of voice beyond linguistic performance to include other semiotic ways of communicating (such as gesture, intonation, eye gaze or material objects for example) educators can foster the development of activities which support children's communication and develop their spoken language skills.

In the data embodied cues, verbal cues, material objects and signs are all important to the ways in which children are able to voice their thoughts. These resources are used together to serve a variety of speaker and addressee purposes. A noteworthy purpose is managing the online communication. For example the children's use of their body language allows them to call attention to different social spaces. By increasing or decreasing interpersonal distance children can create different ways of being together, while shifting attention to activity in the backstage or frontstage area of the webcam image can signal their social presence or absence. These different forms of being among others in turn allow for different conversational roles to be assumed. In this way multimodal resources help to control the conversation as children move between topics (from a quiz to teddy bears for instance in Figure 5), and move between genres of expression (such as from a formal question and answer style of voice to a more conversational style). The use of gesture, eye gaze, objects and signs can help to organise what is expressed as well as to sustain conversation.

Multimodal resources also serve important purposes for the speakers as they engage their voices in their L2 through Skype which provides a visual medium for expressing a voice. Thus, the young language learners in the present study were provided with material ways to represent their ideas

other than through spoken or written words. In the data the children creatively combine gesture with words, objects and signs to symbolically enhance the way in which they make meaning. An example is the flag on Anna's teddy bear. Placing the flag at the forefront of the screen elicited questions and vocabulary from Anna's addressees which eventually enabled her to share how the bear connected her to England. The use of the bear as a prop lightened the cognitive load for Anna allowing her voice to express more than it might have done had she used just words alone. Finding ways to connect their voice with others is motivating for children, prompting further dialogue. More time spent engaging their voices in dialogue means that young learners are given considerable opportunity to interact with other children through one-to-one or small group conversation in the online space provided by Skype. This combination of linguistic with other modes for expressing voice encourages children to focus on meaning and fluency in an attempt to sustain the conversational flow. This focus may be different to psycholinguistic approaches to language learning in the classroom where children are expected to pay more attention to the form and accuracy of their spoken English (Dweck *et al.*, 2003).

Teachers wishing to use video conferencing to support language learning in the classroom need to recognise that the emphasis on linguistic skills and knowledge underlying psycholinguistic tasks focused on form are not enough for children to voice their ideas through sustained conversation. If children wish to express something in dialogue with others in this environment they must not only say something, but be visibly seen to say it. There is a need for them to be proactive and creative in finding ways to make meaning with others. An attempt by the teacher to control the performance of skills and knowledge could stifle children's ability to express their voice through Skype. By viewing learning as a fixed and limited commodity, acquisition focused approaches place a greater emphasis on measuring and judging performance goals relating to the particular focus of the learning task (Dweck *et al.*, 2003). For instance, if a teacher establishes that a focus for a Skype session was *to ask questions using the standard question form*, then this focus is likely to dominate the kind of activity and language that children view as important. The subsequent conversation is likely to consist of an exchange of pre-rehearsed questions and short answers. The more the lesson objective is narrowly defined by the teacher the more limiting will be its effect on children's

abilities to communicate through Skype. Thus, a greater emphasis on spoken language will marginalise the role of other modes of communication, restricting the ways in which children are able to express their voice to others during the conversation. Moreover, only those children that are confident of experiencing success according to the teacher's set criteria will risk giving voice to their ideas and risk exposing their capability in public while others will keep their voices to themselves.

In contrast when learning is seen more generally as the development of children's capabilities through social interaction then children are more oriented towards activities that will allow them to reach beyond what they are able to do on their own and expand on their learning in different areas (Dweck *et al.*, 2003). This perspective considers learning to be a social achievement. It is in line with the view that young learners express their voices in interaction with other voices through the development of shared dialogue. The children in the examples from data in this study drew on a range of semiotic resources (including objects, signs, and gestures) to share their ideas about things that they might not have been able to talk about using just speech alone. They were able to use the resources in creative ways by leading the conversations. Their teachers helped to set the general themes of each session but relinquished control over what would be said and how. An understanding of learning as a social process encourages educators to emphasise the broad development of, rather than the narrow acquisition of, communication skills. The findings of this present study will help educators to establish learning goals appropriate to the multimodal ways in which children experience and express voice through Skype or other similar online environments. The distinctive features of the online interaction described in this study that allow children to successfully manage and sustain conversations provide examples that other L2 learners can follow.

In addition to the multimodal ways in which voice is constructed through Skype, communication is also dependent on the lived experiences that learners bring to the learning environment (Liddicoat *et al.*, 2003). Children's voices reference their lives outside of the classroom exophorically through the use of signs, material objects and words in the data. It is suggested in this thesis that the creative ways in which children bring aspects of their lives outside of the classroom to their Skype conversations plays an important role in how they are able to express their voices. Bakhtin (1986)

conceptualises voice as a social act which binds people together. What binds children together in Skype conversations is the social and emotional connectedness they experience when they exchange feelings and attitudes towards shared aspects of their lives. Child-led conversations are often constructed from the children's interests. This social process of experiencing and expressing voice motivates further dialogue, building a sense of trust and togetherness between the conversational partners. This thesis would suggest that dialogue around shared aspects of children's lives out of school should be valued in school and used to support the development of communication skills and social interaction between children.

Nevertheless, while children might be familiar with learning conversations in the traditional classroom the particular circumstances of computer-mediated communication through Skype are different. It is possible that children who are not taught to express themselves through video conferencing will find that the opportunities to practice their L2 in online conversations are curtailed or limited. The discussion about how the children display their personal front (section 5.1.2, p. 55) illustrates how structures for classroom management such as sitting in rows or raising hands to signal turn taking does not help children to work together through Skype. In the data this kind of classroom behaviour and the features of IRF classroom talk (Sinclair and Coulthard, 1975) were disrupted by ambiguity over whether the conversation was controlled by the teacher in the physical classroom space or by Anna in the represented on-screen space. This ambiguity leads the children to change their behaviour and find alternative ways of expressing their voice or risk being left out of the conversation. It is possible that for young children entering the unfamiliar surroundings of video conferencing conversations in the classroom, the different possibilities for expressing their voices including different ways of being socially present or absent, different routines and rituals could be confusing. Young learners need to be able to understand the ways in which they are able to voice their ideas in these circumstances. Teachers have an important role to play in helping children manage their telecommunication exchanges so that they are better able to engage their voices in sustained conversation. Through sustained conversation the children are able to build on each other's ideas and in this way think together.

The dialogue that develops from this way of thinking together grows around a central theme as children make associations between the theme and their own lives. These associations are expressed through children's voices which stimulate further response from their social partner, binding their voices together. Thus, a child's voice is experienced and expressed in relation to the voices of others as an orchestration of multiple modes of communication. The interdependence of any one speaker's voice on that of the other makes it very difficult to segment the data into a series of conversational turns. This begs the question of who owns the voice being expressed in the data sections. From an educational perspective this raises important issues concerning the assessment of individual attainment in multimodal online environments. Assessment in schools often reflects an acquisition focused approach to learning which is less open ended, less dialogic and less team based. Teachers measure children's performance according to individualised attainment goals. To this end there is a need for teachers to exert some control over the ways in which the children's interaction develops and to analyse their language use closely. The findings of this present research suggest that children's Skype-mediated communication provides them with rich opportunities to practise their developing communication skills when conversations are child-led. This context is related to a view of learning as social activity in which children's performance is contingent on their ability to connect with others. It is, therefore, difficult to measure on an individual basis. The role of the teacher in this situation is to monitor the conversations and limit their intervention to the minimum. This requires consciously stepping back from directing the activity and trusting the students to take the lead. At the same time, the teacher should be open and flexible to respond to the complexity of the context in which the children are interacting if the need arises.

6.2 The impact of this current research on the researcher's professional practice

As a language teacher conducting research in my place of work it has been inevitable that both my teaching practice and my approach to research were constantly being formed by each other. Indeed the impetus for this present study came from non-formal experiences working and talking with children in schools. I became aware that children's experiences with technology at home were often very different to those that they had when learning in school. From developing projects with

the local community and observing children talking with visitors from another country it was apparent that when children perceive a real purpose behind their learning they are more motivated to express their voice and engage in English. I was interested in exploring ways of bringing these two observations together in a learning environment to see if they would have a beneficial effect on the ways children are able to communicate in their target language. Reflections on my professional practice were the stimulus for this research.

To begin with I envisioned the video conferencing context to offer much the same opportunities and constraints as those found in face-to-face contexts. Following the initial Skype conversations between the children I quickly came to see the video conferencing space as an entirely different place in which communication happens. The different ways in which children approached conversation reflected their efforts to overcome the challenges of using this medium and make the most of the multimodal resources at their disposal. The kinds of resources available for making meaning were in part dependent on the material surroundings in which the conversations took place. Thus the physical space influenced how children were able to express their voice. The process of coming to understand the role played by the physical space in which a Skype conversation happens made me more aware of the classroom as a space for interaction. Understanding that online conversations happen in a context that is very different to everyday face-to-face conversations in the classroom forced me to look at similarities and differences between the two (albeit in an informal way). In doing this I was able to gain a different perspective on the classroom and the way in which it shapes the kinds of conversations that happen there.

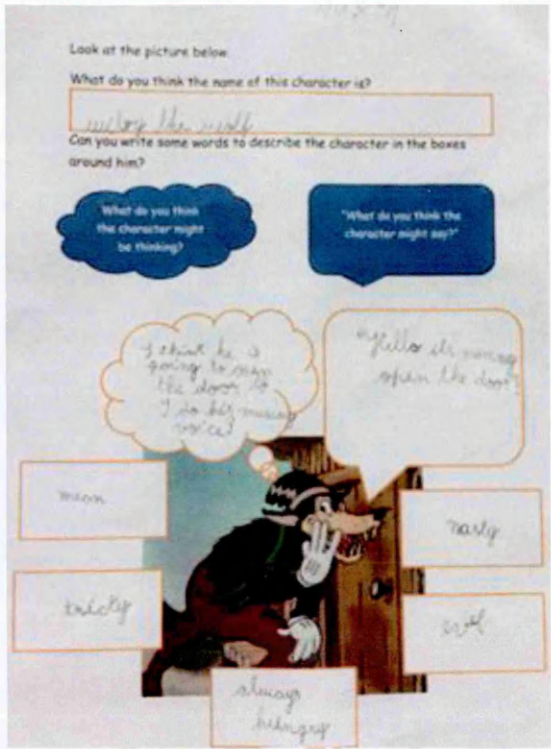
This led me to consider how multimodal resources might augment or enhance children's expression of voice as well as inhibit it. In particular it was interesting to see which children were able to successfully sustain conversation in order to share their ideas on Skype and which found working in this environment more challenging. From knowing the students as their teacher, I was initially surprised by those who stood out as being most capable at getting their voices heard. It was not always those students that perform best on paper in academic tasks. This has important implications for what we teach and why we teach it, but also on what we assess and why we choose to assess it. On reflection it occurred to me how much of my formative teacher assessment involves

the expectation that children will revoice my own words back to me without any opportunity to creatively apply their learning. The experiences I have had using Skype with young learners would suggest that learning only really takes place if it can be applied to new contexts or used for other means than satisfying narrowly defined acquisition targets set by the teacher. Children's communicative acts can be read in sophisticated ways that are difficult to capture in assessment rubrics and curriculum guidelines. Indeed it would be valuable to explore the extent to which a multimodal view of children's language production in such activities as story telling or factual reporting is in alignment with or different to their standardised attainment score. From my own experience it is possible that those children who do not perform well in academic tests can still excel when it comes to the creative application of their communication skills for a real purpose, such as that provided by the Skype project.

In my own classroom practice I became more mindful of giving students non-verbal ways of expressing voice when introducing new concepts, structures and vocabulary to children. An example can be taken from a teaching unit based on traditional stories that was taught during the study. A pre-assessment activity aimed at eliciting descriptive vocabulary from the children used an image of *Mr Wolf* knocking at the door (Figure 31a and b). The students had not been introduced to the story and the picture had not been discussed prior to their writing about it. The image was used to help the children make connections between the typical behaviour of this type of character, Mr Wolf's body language, the surroundings and the words and phrases that might be associated with this type of character. It was interesting to see that what the children thought the wolf was thinking and what he was saying to the character behind the door were often very different things, suggesting that children's familiarity with wolves in stories together with the setting led them to read the character's body language as mischievous. The students then shared their ideas in small groups allowing them to compare their understandings of what Mr Wolf might be up to as well as learn new language items from each other. All of the language that this activity produced and developed into took, as its starting point, the non-verbal ways in which the character is able to communicate.

The children were asked to write what they thought the character in the picture might think and say as well as write words or phrases that would describe him

31a



31b

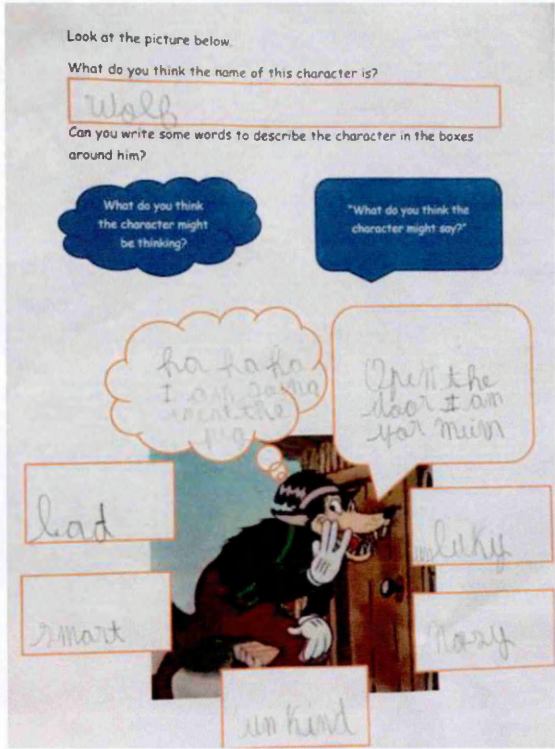


Figure 31. Pre-assessment worksheet exploring non-verbal alongside verbal communication

I also became conscious of the value in encouraging child-led conversations. Allowing the students greater freedom to express themselves pushed them to apply their learning purposefully. To try and create the conditions in which children might take on different roles and interact in different ways I started to explore the use of different spaces around the school and experiment with different classroom layouts. By altering the place where learning conversations happen the intention was to break with the genre of classroom talk that privileges teacher voice over all others as a source of new learning. Changing the layout of the classroom into an open space meant that the children were able to experiment with different ways of being together and manage their use of interpersonal distance. I feel that these efforts have helped to engage children. They were able to voice their ideas to create a project that connects the school with its local community, giving the children a purpose for their learning. The project brought the school together with a home for the elderly. The child-led activities involved the students conducting interviews with members of the

home and then creating books with the information that they found out. The books were then shared with the members of the home and given to them.

Activities such as these provide valuable opportunities for the children to engage with others in different ways and become more aware of the multimodal ways in which our voice is expressed. However, they were often the result of serendipitous opportunities to append my own agenda on to that of an already packed curriculum. The work described above does not have the consistency of a curriculum sanctioned programme of study and so it is difficult to know how beneficial such work could be for young learners if it was structured for them over time. For an awareness of multimodal communication to truly have an impact on children's learning it would require recognition at a policy level, which has yet to happen. Nevertheless, in my own institution teaching practitioners demonstrate a willingness to explore video conferencing technologies and the role they might play in helping children to engage their voices with others beyond the school walls. In my role as a teacher coach I have been approached by two teachers who wish to develop Skype projects with overseas schools.

6.3 Implications for methodology

The methodological tools developed from Scollon and Scollon's (2003) concept of geosemiotics provide a useful starting point from which to investigate questions concerning how children express their voice through video conferencing. It is important to acknowledge, however, that the categories employed in this study were not originally developed to explore the meaning systems by which conversations are located in the digitally represented world alongside the material one. The findings from the current research would suggest that applying geosemiotics to the study of video conferencing communication in primary classrooms requires further refinement to provide a more effective tool for describing how different modes of making meaning interact with each other.

The *interaction order* has the potential for distortion when observing the use of meaning making resources in video conferencing conversations. This is because the represented images of the speakers are unstructured images that rely on serendipitous insights concerning their social performances rather than the carefully crafted images that reveal the intentions of a film director

for example. Without the deliberate staging of embodied actions it is hard to determine which embodied states reveal insights about social performance and which reveal conventions relating to the technological environment. For instance the image capture from the video camera is an upper body shot which represents a distance of 4 to 12 feet between the interlocutors through the digital image. Scollon and Scollon (2003, p. 96) suggest that this range in a face-to-face situation requires either interaction or civil inattention (purposeful avoidance) between the interlocutors. The demand for eye contact is the first move in opening up a social space for further conversation. However, the webcam used to capture the data segment is separate from the screen so when the children are watching each other on the screen they appear to be looking away from each other on the represented image. In a face-to-face situation this would signal civil inattention and index a desire not to participate in conversation. It is possible that both the social actors and the researcher's reading of these embodied states can be wrong. This example illustrates how much of what is read from a speaker's voice is conveyed through postures and movements to others in the same situation. Not only must social actors participate in social interactions in a meaningful way but they must be seen to be doing so (Scollon and Scollon, 2003, p. 52). In a Skype encounter gestures, postures, gaze and body movements may not always index the inner psychological state or speech will of an interlocutor, that is, their voice. Instead it might reflect the way the images are represented through the video conferencing medium to the conversationalists. This poses a particular challenge to identifying the different semiotic resources that are integrated through the performance of a speaker's voice.

A further challenge to the use of the *interaction order* comes from the limited capture of the webcam. The image shown by the camera places an additional restriction on the degree of useable space and the ways it can be used. Unlike a conversation in which all members are physically present, the camera lens determines the public space used in Skype conversations. The webcam also defines hidden or backstage spaces that fall out of range of the lens (Goffman, 1959). From the image captured by the lens it is often tempting to treat the data section in this current study as a 'with.' If so defined, analysis of this grouping would be led by certain inferences about the social role of the interactants at that moment and the kinds of language that could be packaged with this

particular social unit. However, although the screen capture shows only the visual presence during the social event the voices of spectating classroom peers and teachers are audible. This means that the segment also contains features of a 'platform event'. If the public space is socially accessible to others instead of a closed space for communication between two children then different forces are at work to shape the students voices. The embodied actions of the children are produced not only out of internal motivations, but also in response to and conjunction with the actions of others who are present in the social situation (Scollon and Scollon, 2003). Different kinds of actions might be anticipated from different types of social situation. The Skype communication in the data set is represented through Skype as closed communication between the children on the screen. However, at the same time the children's interaction is being watched by their class mates off screen who might occasionally support them, making the conversations socially open. Ambiguity over the social role being performed by the children when the communication takes place makes it difficult to draw inferences as to the kinds of discourse that will be found there. The primary social interactions of the interactants are focused on the unfolding of their actions in relation to each other rather than the spectators watching. However, watchers of the spectacle are present and might influence the interaction. This provides a clear 'front stage' and 'backstage' divide in the children's performance of their voice depending on its intended audience. The interaction order during Skype conversations would appear to contain units within units.

Another issue is with the sub category of *perceptual space*. This geosemiotic category was initially developed to describe the physical space between people in a social encounter. However, when the encounter happens through video conferencing the degree of visual proximity relates to how close one is to the webcam rather than the person. Auditory space also takes on different characteristics as volume can be altered regardless of the speaker through the sound equipment. For children to establish a dialogic relationship they must understand the problems and opportunities that arise from indexing these different perceptual spaces through the technology and learn to work with them. The category of perceptual space can be seen to take on a slightly different meaning in this context.

Location is a sub-category of *visual semiotics*. This sub-category investigates where information is located in a frame (in the case of the current research a computer screen). A person located in the centre of the computer screen, for example, is given more attention and so is more able to express meaning than someone on the periphery. This aspect of the category would appear to be fairly robust in the context of video conferencing. However, analysis of these structures according to their left and right positioning within the frame is unlikely to reflect the relationships of given and new information identified in van Leeuwen's (2008) study of children's written texts. In video conferencing one might expect this relationship to be inverted. This is because left and right (unlike up and down) are not universally fixed positions, but relative to the individual who perceives them. Through Skype what is to the left of the speaker is represented as being to the right of him or her on the addressee's screen. Moreover, the appearance of corners and sides are features of the image represented through the webcam and only exist on the screen of the addressee. The speakers are sat in the classroom where such boundaries do not exist. These categories were initially devised to study the carefully crafted images in advertisements where the meaning transmitted by where things are placed is often more direct and deliberate. During Skype communication the location of semiotic resources can be influenced by more factors than just the speakers' intentions and must, therefore, be treated with caution when considering the video data from this current study.

The discussion above highlights the need for further development of the categories used to study how voice is expressed through video conferencing technology. The geosemiotic systems provide an effective means of identifying how different modes of communication interact in a particular place and time. However, when applied to online contexts there is some potential for error as to how each system is read by the researcher.

6.4 The contribution of this study to research

The concept of voice has been widely used in the literature to guide the research and teaching of language and culture. Because of the many ways in which voice has been previously invoked isolating it in terms of a particular theoretical understanding posed a challenge. A contribution of this study to research is the concept of voice it generated in the online context to encompass the complex ways children voice their ideas through Skype.

Skype video conferencing software enables the orchestration of a whole range of meaning making resources in new educational situations. The present investigation of voice in this environment has attempted to account for the full repertoire of meaning making resources rather than focussing on linguistic accomplishments. Voice is therefore considered to be the transformation of socially meaningful resources into meaningful conversation with others. For a speaker's voice to express something it must engage other people in conversation and, therefore, be intrinsically dialogic. As such, voice is understood as part of a chain of communication that incorporates elements of addressivity and responsivity (Bakhtin, 1986).

Previous research into online communication through video conferencing in a second language learning context has examined interaction between adults or young learners of secondary school age (11 years old or more). Research into how young children make meaning has been undertaken in face-to-face contexts. At the time of writing, however, no research has previously been done into how children experience and express voice in an L2 through online webcam-enhanced communication. An exploration of the meaning making resources involved in articulating children's voices through Skype necessitated the in-depth study of a small sample of data. A micro analysis of the recorded data was needed to identify the complex and creative ways in which children orchestrated the use of diverse meaning making resources (including words, eye gaze, gesture, objects, signs and the spaces around them). A short 9'21" recorded excerpt created a vast amount of data. For the study to be feasible, therefore, the analysis focused in detail on a single case. The emerging themes from the case study were then compared with the seven 30-minute long recorded sessions from the principal study to corroborate them. The findings from this current small-scale single case study should make a significant contribution to the field of voice research.

Due to the absence of other comparable studies into children's voice a robust framework for analysis of the video data needed to be developed. Another important contribution of this thesis is, therefore, the adaptation of Scollon and Scollon's (2003) framework to study the semiotic systems through which voice is expressed online in the material world. Geosemiotics brings together research from linguistic anthropology, social psychology, sociolinguistics, cultural studies, semiotics, visual anthropology, sociology and cultural geography to systematically analyse how

people express themselves materially in the world. The multidisciplinary approach taken by geosemiotics has not so far been applied to children's conversations through Skype in any other studies and it had to be adapted to accommodate the online setting. In addition to what has been mentioned above (see Chapter 7.3), in the present research the sub-category in the interaction order of *personal front* is understood to be only those aspects of a person that are made prominent through conversation. This is different to Scollon and Scollon's (2003) concept which encompasses all of the ways in which a person can make meaning with their body, whether they are in use through conversation or not. An additional change to Scollon and Scollon's scheme was made to the visual semiotics category. In the original scheme the sub-category *composition* describes how the arrangement of information on a page, poster or other preconceived and planned text conveys information alongside the actual content of the words, images or objects being used. There was no direct composition of how people, objects or the physical space was set out in the Skype conversations of this study. To reflect the more spontaneous way in which information might be presented on screen this sub-category was changed to *location*. The focus was placed more on how this relates to the salience of meaning making resources through their position on the screen rather than their framing according to norms for use in a particular type of communication (e.g. advertising, or film). The place semiotics category similarly experienced a change in focus. In Scollon and Scollon's scheme the sub-category *emplacement* is concerned with where in the physical world a sign or image is located. This category is altered in the context of video conferencing as the represented space on screen creates a third space in which modes of information can potentially be engaged with in ways that are different to the familiar patterns of classroom behaviour. To reflect this concern the sub-category was changed to *social context*, which identified situated or transgressive references to these different social spaces. These categories provide a useful starting point for charting the relationships between information structures when children express their voice online. Accordingly the strategy used to interrogate the data might be used to inform and guide further multimodal analysis of voice using video data.

6.5 Future directions

The methodology developed and used in the current research illustrates one way in which the concept of geosemiotics might be used to model children's behaviour conversing through Skype. However, the perspective on voice offered might be used to inform and guide analysis in a variety of research designs aimed at answering related as well as broader questions. Such research might take the form of further empirical studies aimed at category development or broader mapping of the physical\material characteristics of voice to explore how their use may be different. In addition, mindful of the opportunities for participation that online spaces offer children who are disadvantaged by traditional approaches to class-based learning (Levy, 2008, Gomez, 2009, Marsh, 2003, Neuman and Celano, 2006, Warrington *et al.*, 2006) it is ultimately envisaged that a better understanding of how voice is expressed through telecollaboration could help children to develop their L2 more effectively in this non-traditional environment and support their class based learning.

This current small-scale study investigated the communication between small groups of children. This meant that at any point in their conversations children needed to compete with other members of the group to express their voices and contribute to the development of dialogue. A noticeable feature of the conversations in the data was the need for a speaker to be visibly seen to be communicating something to others in order to get a response from the other members. It is possible that many of the creative multimodal ways that the children found to express themselves and engage with others were prompted by this need to compete. It would be interesting to know how this dynamic might be different in one-to-one conversations using Skype. With only two children forming a '*with*' they each would have a greater role to play in maintaining the development of the dialogue, without the pressure to make their voice more salient than others. It would be interesting to know if the greater cognitive burden placed on L2 speakers leads them to explore semiotic options other than verbal language to support their voice.

The value of a multimodal understanding of voice in video conferencing environments depends in part on its utility as a psychological tool that teachers might use to help young learners reflect on how they can engage their own voices to fully exploit the potential of Skype as an online space to support their learning. To this end, conceptualising voice to include body language as well as

linguistic performance might be used in a developmental research agenda that empowers children to communicate beyond the limitations of their verbal skills. From a Vygotskian (1978) perspective the cognitive load for making meaning is distributed between the speaker's brain and the tools at their disposal (including the material world and the computer represented world as well as the minds of others). By making meaning through tools other than their linguistic ones, speakers are able to express more, opening up opportunities for further language learning. Similarly the notion of different social groupings in the interaction order and how this relates to represented distances in video conferencing spaces might be used in a developmental research agenda aimed at alerting young learners as to the ways they can purposefully manipulate the roles they have in social encounters to enhance their ability to voice their ideas. Likewise, the notion of child-led conversations happening in the third space of Skype might be deployed in developmental work to call children's attention to the value of cultivating links beyond the confines of the school walls. The third space context encountered by the children using Skype is different to the formal classroom context allowing for ways of expressing voice that are highly situated, distributed and socially shared. When children find ways of connecting with others they encounter potentially rich opportunities for extending their personal networks while practising their L2. This seems particularly important as modern life is becoming increasingly migratory and the use of social software tools has become part of the day to day lived experience of many people.

6.6 Limitations of the study

It is important to stress that the geosemiotical categories used in the analysis need to be treated with a degree of caution. Many could be refined and developed through further cross case analysis. Some concepts are too heavily embedded in the context for which they were developed and insufficiently sensitive to capture the practices that emerge in video conferencing environments. An example is the ambiguity discussed above (see chapter 7.3) which stems from trying to determine if an action relates to an act of communication or a response to the technological environment. Additional concept development will require further fine grained multimodal analysis of qualitative data. This is essential if this research agenda is to advance with sensitivity to the emerging ways in which children express voice through tools such as Skype in the classroom, and not be limited to mapping

the old on to the new. A particular problem in the current research was trying to gauge if children are showing interaction or civil inattention from their embodied actions in the interaction order. Making eye contact with another person is the first move in engaging them in further conversation. However, the webcam used to connect the classrooms was positioned so that it broke the line of children's gaze away from each others' eyes. In a face-to-face situation this move would suggest that the children were socially absent from one another, when in fact the children might be engaged and wishing to communicate. This mixed message creates a potential for error in the way that both the addressee and the researcher read the situation. Thus, in a Skype encounter gestures, postures, gaze and body movements may not index the inner psychological state or speech will of an interlocutor in the same way as in face-to-face encounters. If one thinks in terms of image representation through the video conferencing medium it becomes apparent that the interaction order, originally devised to conceptualise face-to-face encounters is inadequate for conceptualising online webcam enhanced encounters. With regard to this, further conceptual development grounded in qualitative analysis of video data should be a priority.

To identify whether the body language displayed by an individual is a deliberate part of their voice or an inadvertent effect of the technology the researcher would need to gain the perspectives of the participants in the conversation. This could be done through stimulated recall of the conversations using the video data after the event. This information would potentially reveal valuable information concerning the speaker's motivation behind the semiotic choices that they made to express their voice. It would, for example, clarify whether an embodied action such as a represented look away from the screen should fall into the category of civil inattention or social presence due to the positioning of the webcam. The additional contextual information gained through combining methods could help to increase the chances of accuracy. However, combining the participants' point of view with a geosemiotic analysis presents a challenge when working with children. A fundamental problem associated with the strategy of seeking children's perspectives is the potential for their behaviour to be influenced by the research process. As a participant observer I was familiar to the children as a teacher, and children are used to giving teachers the answers they believe they want to hear. This would pose a question over the validity of the perspectives provided

by the participants. Moreover, half of the group were located in a different country. This distance meant that getting access to their perspectives was problematic.

An additional direction for concept development suggested by Lamy and Flewitt (2012) includes a separate category for the mode of sound. In the present study a feature of Skype is its use of sound to signal the social presence of others through a ring tone and messenger alert sound. These aspects of Skype were subsumed as part of the interaction order and would fall into the category of auditory space. Auditory space encompasses a variety of semiotic options including verbal speech, intonation, background noise and alarms to name but a few. However, in a Skype conversation sound becomes the primary signal for social presence due to the ring tone. This is a different structure to face-to-face conversations where the opening move in a conversation is often eye gaze (Goffman, 1959). The role that sound might take in video conferencing conversations is significant and merits recognition as a system in its own right. Sound could, therefore, become a fourth geosemiotic system, placing the sound order alongside the interaction order, visual semiotics and place semiotics (Lamy and Flewitt, 2012, p. 91).

The use of qualitative methods to explore the complexities of how children experience and express voice through Skype produces an extremely messy data set based on fine grained observations of a wide variety of semiotic practices that cannot be easily compared. Indeed, when attempting to understand the particular ways in which each child voices their ideas it is important to respect the specificity of the case. This is particularly so as there are presently no other studies investigating children's voice in a video conferencing environment. Consequently, it could be said that the insights gained cannot be generalised beyond the groups of children studied. Nevertheless, the aim of the current study has not been to generalise, but to describe instances of children's computer-mediated voice that are essential to the overall way in which their conversations are structured. If successful, the descriptions serve as examples of wider trends that might resonate with the experience of the reader and thus, facilitate a form of naturalistic generalisation (Stake, 2006).

7.0 References

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Appendices

Appendix 1. The consent forms used to gain permission for this study.

1a The letter given to the children



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nicholas.austin@clip.pt

Dear _____,

My name is Mr Austin. I am a teacher at _____, a school in Portugal. I am writing to ask if you would like to be in a project with _____ and your school.

When will this happen?

This will happen every Monday during the lunchtime.

What will I do?

You will meet new friends from Portugal/England on the computer using Skype.



You will get to talk to your new friends about yourself and your school.

You will work together.



What will Mr Austin do?

I will see your work. I will record you talking to the other children. I will look at the recordings to find out how you work together using Skype.

Yours faithfully

Mr Nicholas Austin (Class teacher)

Skype research project

Agreement to Participate

I would like to be in this research project

YesNo

☐☐

I understand that the Skype calls will be recorded.

YesNo

☐☐

I understand that Mr. Austin will study my work.

YesNo

☐☐

I understand that Mr. Austin will study the calls.

YesNo

☐☐

I understand that if there are problems that cause
distress to myself or others they must be shared with
the people who care for me (my teacher and my parents/guardian).

YesNo

☐☐

If you have any questions make sure that you ask your teacher!



My name is (in CAPITALS)_____

My class is_____

Signed:

Date:

1b The letter given to the parents



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Dear Parents/Guardians,

My name is Nicholas Austin. I am a teacher working in the primary department of _____. At present I am also studying for a doctorate degree in Education with The Open University. I am writing to you to ask your permission for your child take part in a project with children of the same age from a school in Portugal.

What is involved and how will it benefit my child?

This is an optional extra-curricular activity that will be at lunch times. The activities are designed to support and add further challenge to the work that the children do in the classroom. The children will talk to each other using Skype video conferencing software. This technology makes it possible for the children to talk to each other face to face via a computer without needing to

leave their own classrooms. Talking together through Skype is beneficial to the children as they are challenged to put their English skills to the test in order to successfully accomplish tasks together. In addition to developing your child's language skills through meaningful activities these online conversations will help the children to learn about other cultures while making new friends from another part of the world.

I will record these conversations so that I can study them to see how your child communicates with others in order to complete the activities. Your child will also be interviewed so that they can share their ideas about the project. These interviews will also be recorded.

In giving consent to your child's participation in this research project you will be making a meaningful contribution to the development of teaching methods in schools

Does using Skype risk my child's safety?

Skype is a safe application. Communications are child to child using the school computers and the call is automatically encrypted using the Advanced Encryption Standard (AES) as it is relayed through the internet. This means it is safeguarded from hacking. Moreover the contact details and profile information for the Skype accounts are set up in the schools' names and with the schools' information. This means that the children using the Skype accounts to talk to each other remain anonymous and untraceable by web searches.

Skype therefore allows students to speak, see and send messages to children in another classroom in a safe way through the internet. This communication tool is increasingly being used in classrooms across the globe and is transforming the ways in which children can talk and work together. In order to make the most of the learning opportunities offered by Skype it is helpful for educators to understand how children are able to engage with others from different parts of the world through this technology.

If you agree for your child to take part what will your child be asked to do?

I would like to record the Skype conversations between your child and the participating children from the school in Portugal. These conversations will be studied to identify the ways in which the children are able to make themselves understood. The children will also produce a short film about their school and a presentation as part of their work together.

What will happen to all of the data collected from your child?

The utmost effort will be made to ensure the anonymity of your child throughout the research process. All digital data collected during the project, such as the Skype conversations, will be securely stored on a password protected external computer hard drive. This information will only be accessible to me and be seen by educators working directly with me on the project. After analysis and the completion of the final thesis all recordings will be permanently deleted.

The anonymity of your child will be protected in all published material e.g. my thesis or academic papers I write. This will be done by referring to each child and the school by fictionalised names in all written recordings of the comments that they have made. To further protect their anonymity in all screen shots included in the report, faces and school logos will be blurred so that they cannot be identified.

What do you need to do next?

Please read through the consent form given below. If you wish your child to take part in the study you must fill in the enclosed Agreement to Participate form and return it to your child's class teacher. If you do not want to sign the consent form your child will not participate in this research but can still benefit from taking part in the Skype project. Furthermore if you wish to withdraw your child from the research after signing the consent form this can be done by informing the class teacher. Your child will be immediately

withdrawn from the research but may continue to benefit from working on the project.

Yours faithfully

Mr Nicholas Austin (Class teacher)

Skype research project

Agreement to Participate

	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>
I agree that my child can take part in this research project		

OR	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>
I do not wish my child to be part of the research but would like them to do the activities.		

	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>
I have had the purposes of the research project explained to me.		

	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>
I agree my child’s Skype calls can be recorded.		

	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>
I agree that a researcher can study the content of the calls.		

	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>
I agree that anonymised quotes can be included in academic papers, conferences or teacher training sessions and that these may appear on the internet.		

	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>
I agree that my child can take part in interviews and allow these to be recorded.		

	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>
I understand that should any issues of concern arise they will be reported to the school by the class teacher and dealt with according to the school policy.		

For further information please contact:

Mr Nicholas Austin

at:

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Rua da Vila Nova, 1071
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If I want to talk to someone else about
this project, I can contact the
Project Supervisor (Research)

Dr Regine Hampel

at:

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Email: r.hampel@open.ac.uk

My child's name is (in CAPITALS)_____

My child's class is_____

My name is (in CAPITALS)_____

Signed:

Date:

1c The letter given to the head and class teachers



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Dear _____,

Following the successful introduction of a Skype project between _____ and _____ school last year I am interested in implementing another project which will start in September. I would like to build on the work accomplished last year in developing real-life learning situations that allow children to share their life and interests through collaborative activity. This work will form the basis of my research for a doctorate degree in Education with the Open University. I am, therefore, writing to you because I would like a group of twelve 6 to 7 year old children from _____ to participate in an online collaborative activity with children of the same age from another country with a different cultural background. This activity will be an extracurricular lunchtime activity, intended to extend the achievements of the children who wish to be involved. I would be very pleased if children from _____ School could participate in this project.

This project has much to contribute to the ways in which children experience learning. I believe that education can, and should, help children face the current and future challenges that an ever changing world presents them. As educators it is essential that we embrace opportunities to expand the classroom beyond its walls in order to help young learners rise to those challenges. Encouraging children to communicate interculturally helps them to build the knowledge, understanding, skills and values they need to make a positive contribution as global citizens. Connecting in meaningful ways across geographical and cultural boundaries is particularly relevant as the impact of what happens in other parts of the world increasingly shapes young people's lives.

Using Skype conferencing technology to engage students in joint activity will provide an excellent education. Placing children's communication at the hub of the project means they are fully involved in shaping the development of the activities and their own learning. Participatory learning in this way will engage the children while developing confidence, self esteem and skills of critical thinking, communication, co-operation and conflict resolution. These learning areas are crucial for motivating children and will have a positive impact on their behavior and achievement across the school.

From the perspective of the research project I am interested in how primary age learners use language across cultures to reach collective understandings. In a backdrop of teaching methodologies that continue to underplay the shared aspect of using talk, it is a relevant goal for research to focus on how communication between language communities relates to the outcomes of their joint activity. That is, it would be helpful to know if certain ways of using talk lend themselves to achievement in certain activities. There is currently a paucity of information concerning how primary age learners mediate intercultural conversations despite an increasing presence of this in everyday life.

I therefore want to record the children's online conversations through Skype in order to analyse the ways in which they are able to communicate and reach shared understandings. This data will be supported by the film and presentation that the children produce. It will also help to contextualise the data if I am able to interview you and use your comments in my analysis. This interview would be audio recorded. I would be pleased to share the findings from this project and the final report with _____ School. I believe that discovering how learning opportunities can be contrived that encourages young people to engage creatively and critically with their language practices is of interest to both language learners and teachers. I would like to make opportunities available for the school staff to explore the value of developing these practices through intercultural collaboration. I would also like the opportunity to discuss the findings of the study at a later date with the pupils. This would allow us to reflect productively on how the task went and the how effectively we were able to communicate through Skype.

Yours sincerely

Mr Nicholas Austin (Class teacher)

Skype research project

Agreement to Participate

	Yes	No
I agree that the children from _____ Primary School can take part in this research project	<input type="checkbox"/>	<input type="checkbox"/>
I have had the purposes of the research project explained to me.	<input type="checkbox"/>	<input type="checkbox"/>
I agree to take part in short interviews and allow these to be recorded.	<input type="checkbox"/>	<input type="checkbox"/>
I agree the children’s Skype calls can be recorded.	<input type="checkbox"/>	<input type="checkbox"/>
I agree that a researcher can study the content of the calls.	<input type="checkbox"/>	<input type="checkbox"/>
I agree that anonymised quotes can be included in academic papers, conferences or teacher training sessions and that these may appear on the internet.	<input type="checkbox"/>	<input type="checkbox"/>
I agree that the children can take part in interviews and allow these to be recorded.	<input type="checkbox"/>	<input type="checkbox"/>

For further information please contact:

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Milton Keynes, MK7 6AA, England
Tel. +44 (0)1908 858704
Email: r.hampel@open.ac.uk

My name is (in CAPITALS)_____

Signed:

Date:

Appendix 2 Outline for the lunchtime Skype sessions Autumn Term 2011 (the pilot study)

Date/ Session	Introduction	Activity	Next steps
28 th Sept Session 1	<p>Welcome children to project – explain the aims and objectives.</p> <p><i>2 mins</i></p> <p>Use Skype</p> <p>Meet new friends</p> <p>Talk in English and become better communicators of English.</p> <p>The students think of questions that they could ask each other to try to find out facts about their Skype partner. <i>5 minutes</i></p>	<p>Ss introduce themselves to one another.</p> <p>Children take it in turns to talk to their Skype partner individually.</p> <p>The rest of the class watch the conversation on the whiteboard and make notes on the facts that they find out about the children that their friends meet.</p> <p>What questions were effective? Why?</p> <p>What facts did we find out?</p>	<p>The children choose a fact that they find interesting about their partner and ask them about it / talk about why they find it interesting. How does it compare to their own ideas?</p>
5 th Oct Session 2	<p>Reiterate the aims and objectives. <i>2 mins</i></p> <p>Use Skype</p>	<p>The children choose a fact that they find interesting about their</p>	<p>This activity seemed to be too open ended for the children.</p>

	<p>Meet new friends</p> <p>Talk in English and become better communicators of English.</p> <p>Before the Skype conversation the children role play their questions and ideas with a classmate. <i>5 minutes</i></p>	<p>partner and ask them about it / talk about why they find it interesting.</p> <p>How does it compare to their own ideas?</p>	<p>The conversation might be better structured by sharing facts about our school. The students can support their talk by showing pictures, objects etc from the different aspects that they talk about.</p>
<p>12th Oct</p> <p>Session 3</p>	<p>Mind map the different aspects of the school that we could talk about:</p> <p>Playground, school dinners, important people, favourite lessons... <i>5 minutes</i></p> <p>The students work in groups of 3 to think of 3 important things about that area and find an item that would help people to understand what it is.</p>	<p>Our school:</p> <p>The Portuguese students share some key places and people from their school. They discuss each aspect in groups of 3 from each school.</p> <p>The children are free to use images, props, pictures etc. to help them to talk.</p>	<p>What did we find out from talking with our partners?</p> <p>What do you think are the similarities / differences between the two schools?</p> <p>Write on large paper.</p>
<p>9th Nov</p> <p>Session 4</p>	<p>What should we try to write down when we are taking notes?</p>	<p>Our school continued:</p> <p>The children from</p>	<p>Review the information that we found out.</p>

	<p>Watch the Emma Watson and Rupert Grint interview : https://www.youtube.com/watch?v=C7Qb1Zki7bA</p> <p>Half the class focus on Emma and half on Rupert as they talk about making Harry Potter. Support the students to note down just the key words and phrases that they say as they answer the interview questions.</p>	<p>England have a chance to present their school to the Portuguese children.</p> <p>Teacher supports the other children as they watch the interview on the IWB and take notes.</p> <p>These notes can be collected and made into a scrap book to be presented in an assembly about ‘our Skype project’.</p>	
<p>23rd Nov Session 5</p>	<p>Look at the notes/scrap book made from the previous session.</p> <p>What information did we find out about the school?</p> <p>What aspects are the same as our school? What things about the school are different?</p>	<p>Learning:</p> <p>The children from England work in groups to share something that they have been doing in school since the last time that we met.</p> <p>The children are free to change the classroom furniture in front of the</p>	<p>What was the most interesting thing that you saw? Why</p> <p>What is similar/different to what you do in school?</p> <p>Is there something that you would like to find out more</p>

		webcam and use any items that they feel will help them to explain what the lesson was about.	about from the children?
30 th Nov Session 6	<p>Watch some excerpts from the previous recorded Skype session.</p> <ul style="list-style-type: none">- What different things did the children talk about?- Which children were easy to understand?- What made them easier to understand than other children?- How can we use our observations to make our own talk better? <p>The students create success criteria for sharing their ideas <i>i.e. speak slowly, look at the camera, use items to help demonstrate, involve your Skype partner in the activity...</i></p>	<p>Learning continued:</p> <p>The children from Portugal work in small groups. Their aim is to share something that they have learned in school this week.</p>	<p>Review all of the information that we have collected from our Skype partners.</p> <p>Discuss how we can add this to our scrap book and turn it into a presentation for the final session and for the assembly.</p>
7 th Dec Session 7	<p>Watch some excerpts from the recorded Skype sessions.</p>	<p>Sharing what we found out:</p>	<p>How has Skype changed the way you</p>

	<p>What is your favourite Skype memory so far? Why is it your favourite memory?</p> <p>Explain that this is the final session and that we are going to present what we learned about our new friends and vice versa.</p>	<p>In groups of 3 the children each pick an aspect about the school or learning that they had made notes on and present it back to the other class.</p> <p><i>This session required 40 minutes.</i></p>	<p>try to talk with people?</p> <p>Do you think you are a better communicator?</p> <p>Why?</p>
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Appendix 3. Outline for the lunchtime Skype sessions, Autumn Term 2012 (the main study)

Date/ Session	Introduction	Activity	Next steps
24 th Sept Session 1	<p>Welcome children to project – explain the aims and objectives. <i>2 mins</i></p> <p>Use Skype</p> <p>Meet new friends</p> <p>Talk in English and become better communicators of English.</p> <p>How do we communicate? <i>5 mins</i></p> <p>draw a person and list the ways they can communicate.</p>	<p>Ss introduce themselves to one another.</p> <p>With a focus on asking rich questions Ss play people</p> <p>Bingo with their Skype partners – each class trying to complete their sheet with names:</p> <p>Explain the rules of the game – you can use pictures, hand gestures, any words but the words that are on the top of the page.</p> <p>- The purpose is to try to get the other person to talk as much as possible so that you can find the answers for the questions.</p> <p>- Perform activity</p> <p>- Feedback –</p>	<p>What do we mean by discuss? The use of ‘because’, ‘if’, ‘why’ and ‘I think’.</p> <p>Our Talking Rules</p> <ul style="list-style-type: none">• We share our ideas and listen to each other.• We talk one at a time.• We respect each other’s opinions.• We give reasons to explain our ideas.• If we disagree we ask ‘why’? <p>We try to agree in the end.</p>

		<ul style="list-style-type: none">- How did you communicate your ideas to others? Did you manage to avoid saying the keywords? How? which sorts of questions got people talking the most?	
1 st Oct Session 2	<p>Reiterate the aims and objectives. <i>2 mins</i></p> <p>Use Skype</p> <p>Meet new friends</p> <p>Talk in English and become better communicators of English.</p> <p>Meet new friends – what do you know about someone when you first meet them?</p> <p>What would you like to know? Why?</p> <p>What could we tell people about ourselves?</p>	<p>Facts about me:</p> <ul style="list-style-type: none">- Ss fill in pro forma for facts about themselves- They share their facts to their partner- Their partner has to note down the questions that they would like to ask the person about what they have said.	<p>What do we mean by discuss? The use of ‘because’, ‘if’, ‘why’ and ‘I think’.</p>
15 th Oct Session 3	<p>What are some of the problems we have found with using Skype?</p> <p>When is it difficult to understand people?</p>	<p>Our school:</p> <p>The students share some key places and people from their school. They discuss each</p>	<p>What did we learn from the conversations? What are the similarities/differences</p>

	<p>What could we do to improve on that?</p> <p>Limitations of Skype – speak clearly and slowly and move slowly – pause and remember to listen.</p>	<p>aspect in groups of 3 from each school. The two groups of 3 get to compare similar aspects:</p> <ol style="list-style-type: none"> 1) Our school badge 2) Our headteacher 3) Our favourite school dinner 4) Our uniform <p>The children are free to use images, props, pictures etc. to help them to talk.</p>	<p>between the two schools?</p> <p>Write on large paper.</p>
<p>5th Nov</p> <p>Session 4</p>	<p>What was difficult about communicating on Skype?</p> <p>Discuss then feed back</p> <p>What was good about working in this way?</p> <p>Think of questions that we would like to ask each person. – write down our ideas and practice asking questions to a partner in the class.</p> <p>What do we do if we don't hear them?</p>	<p>Our hobbies:</p> <p>Portuguese students take the role of interviewers. Groups of 3 to ask interview questions to find out about the children from England.</p> <p>Teacher supports the other children as they watch the interview on the IWB and take notes.</p> <p>The notes will then be written up beneath a picture</p>	<p>Review the information that we found out.</p> <p>Teacher models how to turn notes into sentences for the fact file.</p>

	<p>What should we do if they don't answer our question enough?</p> <p>How can we show that we understood the answer?</p>	<p>of each student interviewed to make a fact file of our Skype partners.</p>	
<p>26th Nov</p> <p>Session 5</p>	<p>Review the pertinent rules for talking:</p> <p>What do we mean by discuss? The use of 'because', 'if', 'why' and 'I think'.</p> <p>Our Talking Rules</p> <ul style="list-style-type: none">• We share our ideas and listen to each other.• We talk one at a time.• We respect each other's opinions.• We give reasons to explain our ideas.	<p>Our hobbies:</p> <p>English students take the role of interviewers. Groups of 3 to ask interview questions to find out about the children from Portugal.</p> <p>Students bring things from home to help explain what their activities are and why they like to do them.</p>	<p>Did it make a difference having an object with you when you were talking?</p> <p>Why/Why not?</p> <p>How can we use this to help us communicate better in the next Skype session?</p>
<p>3rd Dec</p> <p>Session 6</p>	<p>Watch some excerpts from the recorded Skype sessions.</p> <p>- How are we talking with our partners?</p>	<p>Learning:</p> <p>The children work in small groups. Their aim is to share something that they have learned in school this week.</p>	<p>What activities and lessons did your partner share with you?</p> <p>Is it something that you also have learned</p>

	<ul style="list-style-type: none">- Is it the same as when you talk with your friends?- Is it easy to express yourself?- Are you saying all that you want to say?- Are there any other things that you would like to talk about?- What makes talking on Skype difficult?- What helps you to talk more naturally on Skype? (Realia?)	<p>They are allowed to use any classroom objects to explain what the purpose of the lesson was, what they were doing and What they found out.</p>	<p>in school?</p> <p>Is it something you would like to find out more about?</p>
<p>10th Dec Session 7</p>	<p>Open activity.</p> <p>Watch some excerpts from the recorded Skype sessions.</p> <p>What is your favourite Skype memory so far?</p> <p>Why is it your favourite memory?</p> <p>The children are given the choice as to what they</p>	<p>The children lead the activity.</p> <p><i>For this activity the children in Portugal decided to create a Christmas quiz for the children in England. It was based on their experience playing some of the games from class in the previous session on learning.</i></p>	<p>How has Skype changed the way you try to talk with people?</p> <p>Do you think you are a better communicator?</p> <p>Why?</p>

	would like to talk about\do with their Skype partners based on their experiences talking with them to date.		
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Appendix 4. A list of all the children featured in the examples from the data

From Portugal

Name	Age (years old)	Nationality	L1
Anna	7	Portuguese	Portuguese
Beatriz	6	Portuguese	Portuguese
Karen	7	Portuguese	Portuguese
John	6	Portuguese	Portuguese
Lee	6	Portuguese	Portuguese
Olive	7	Portuguese	Portuguese
Paul	6	Portuguese	Portuguese
Ursula	6	Portuguese	Portuguese
Zack	6	Portuguese	Portuguese
Wendy	6	Portuguese	Portuguese

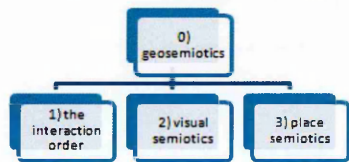
From England

Name	Age (years old)	Nationality	L1
Claire	6	English	Urdu
David	6	English	Urdu
Ethan	6	English	Urdu
Fiona	7	English	Urdu
Gary	6	English	Urdu
Heidi	7	English	Urdu
Jane	7	English	Urdu
Mary	7	English	Urdu
Ian	6	English	Urdu
Nigel	6	English	Urdu

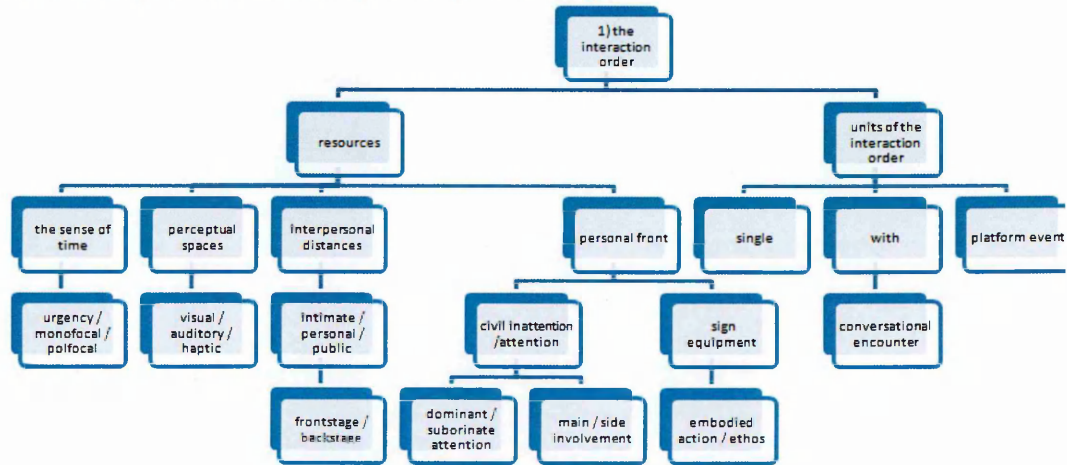
Wayne	6	English	Urdu
Violet	7	English	Urdu

Appendix 5. An overview of the geosemiotic coding tree (adapted from Scollon and Scollon, 2003)

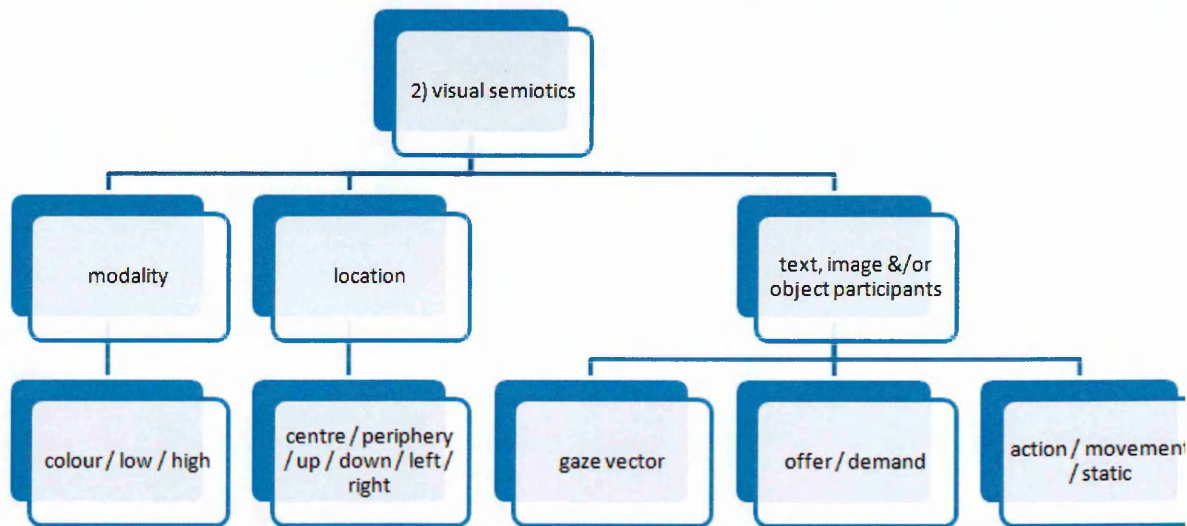
1) The three broad systems that show how semiotic signs are placed in the world in order to give them meaning.



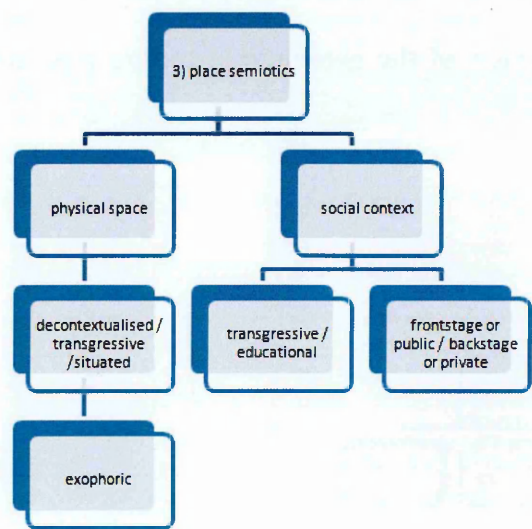
2) The interaction order: The ways in which the human body is used to produce meanings.






3) Visual semiotics: The way in which images and signs appear in the world and are used to make meaning in social situation












4) Place semiotics: the ways in which the placement of discourse in the material world makes meaning that derives from where it is placed.



Appendix 6. Key to the codes used in the transcription of the data

<table><tr><td>Time</td></tr><tr><td>17:35</td></tr></table> <p>The time that has elapsed since the beginning of the Skype session measured in minutes : seconds</p>	Time	17:35	<table><tr><td>Screen Shot</td></tr><tr><td></td></tr></table> <p>The screen image as seen by the Portuguese children. The main image is of the English children. The small box in the right hand corner of the image is the Portuguese children.</p>	Screen Shot		<table><tr><td>hello, myname is Carliota and i'm going to ask some questions for you attention on T = sat back, social distance, lecturer/audience</td><td>social distance- gaze vector signals social presence</td></tr></table> <p>The written transcription. The black text represents the verbal speech. The blue coloured text is the description of a particular mode (in this case interpersonal distance). Different modes within the same category are distinguished by different coloured text.</p>	hello, myname is Carliota and i'm going to ask some questions for you attention on T = sat back, social distance, lecturer/audience	social distance- gaze vector signals social presence	<table><tr><td>Beatriz</td><td>Claire</td></tr></table> <p>The names are pseudonyms for the different students present on the screen. Those highlighted with a blue box are Portuguese students. Those highlighted with a pink box are English students.</p>	Beatriz	Claire
Time											
17:35											
Screen Shot											
											
hello, myname is Carliota and i'm going to ask some questions for you attention on T = sat back, social distance, lecturer/audience	social distance- gaze vector signals social presence										
Beatriz	Claire										

Time	Screen Shot	Anna	Beatriz	Claire	David	Ethan	Fiona	Gary	Heidi
17:35		hello, myname is Anna i and i'm going to ask some questions for you attention on T = sat back, social distance, lecturer/audience	social distance- gaze vector signals social presence	social distance- gaze on screen	social distance- gaze on screen	social distance- gaze on screen	social distance- gaze on screen	social distance- gaze on screen	social distance- gaze on screen
17:40				gaze on teacher when she responds then back to screen	gaze on teacher within she responds then back to screen - gaining permission to speak?				
17:44		looks to B acknowledge connection, 'with'	looks to A 'with'	thank you Anna	thank you Anna Leans in to speak - interpersonal engagement	thank you Anna Leans in to speak - interpersonal engagement	thank you Anna	thank you Anna	thank you Anna

 <p>gaze up at sky – acknowledges ease of Qu</p> <p>Where helpful the text is augmented with screen shots to preserve as much of the context as possible. This makes it easier to retrace the ways in which the data has been interpreted when returning to it.</p>	<p>(thank you) (thank youuuu) (thank you)</p> <p>leans back then throws body forward – OTT closing of space</p> <p>raises hands up to say thank you</p> <p>Brackets indicate points in the data where two or more children are talking at the same time.</p>	<p>(thank youuuu)</p> <p>Repeated graphemes in a word reflect an extended spoken emphasis on those sounds in a word.</p>	<p>Shoulder to shoulder, turned away – closed social space, competing, leaning towards cam.</p> <p>Boxes indicate an activity or sign being given by more than one person at a point in time.</p>					
18:46	  <p>gaze up at sky – acknowledges ease of Qu</p>	with A	(Jesus)	(Jesus) up out of chair – closes distance	(Jesus)	(Jesus)	(Jesus)	(Jesus)
<p>Gaze vector backstage on teacher- checking permission to respond, body leaning in to camera, smiling – backstage regulating frontstage activity – split attention/focus</p>								
18:52		that's correct. you're good at this quizzes.						
18:54	 <p>gaze backstage, smiling, leans in and focuses down on Qu sheet</p>	moves off screen	(thank you)	(thank youuuu)	(thank you)	(thank you)	(thank you)	(thank you)
				leans back then throws body forward – OTT closing of space	raises hands up to say thank you			
19:01	 <p>name one of the things the Kings gave to Jesus</p>			<p>Shoulder to shoulder, turned away – closed social space, competing, leaning towards cam.</p>		<p>With teacher</p>		